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WAR MACHINE

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Armed Forces of the World: US Rapid Deployment Force

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The Thompson in detail with giant colour cutaway drawing

A fully illustrated guide to the Sub Machine Guns of World War II

WAR MACHINE

Volume 1 Issue 6

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Armed Forces of the World

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Picture acknowledgements

Cover photograph: Robert Hunt Library. **Page 101:** T. Gander. **103:** T. Gander. **104:** T. Gander/Imperial War Museum/Orbis Publishing Ltd. **105:** Robert Hunt Library/Robert Hunt Library. **106:** T. Gander. **107:** T. Gander. **110:** T. Gander. **111:** Imperial War Museum. **112:** US Marine Corps/Military Archive and Research Service, Lincs/Military Archive and Research Service, Lincs. **113:** Imperial War Museum. **115:** Robert Hunt Library. **116:** Imperial War Museum. **117:** Robert Hunt Library/Imperial War Museum. **118:** T. Gander. **119:** Robert Hunt Library/Robert Hunt Library. **120:** Robert Hunt Library/ Robert Hunt Library. **(iii):** US Armed Forces. **(iv);** US Armed forces.

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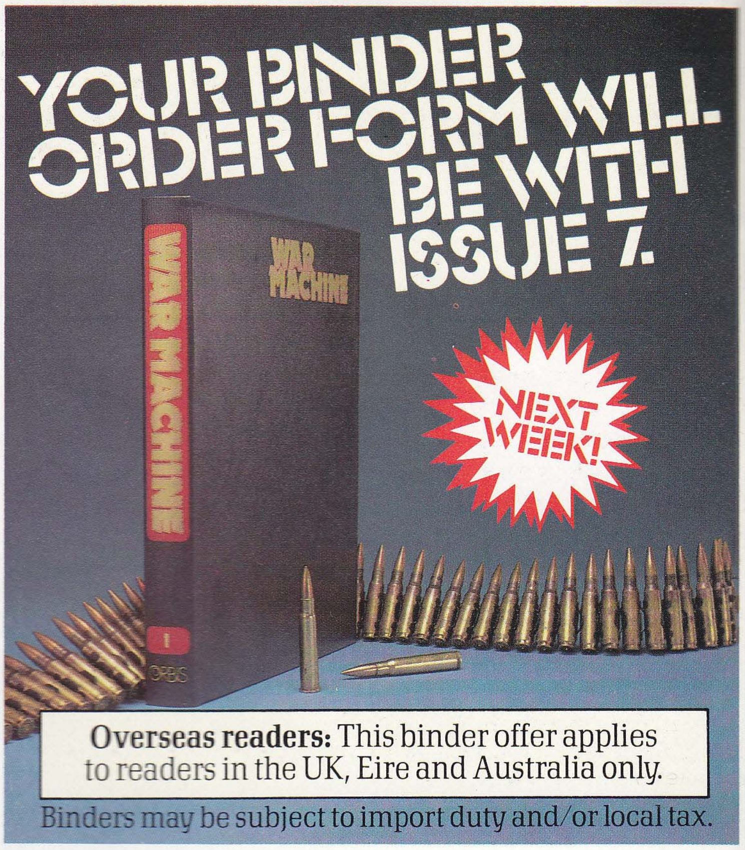

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Binders may be subject to import duty and/or local tax.

Published by
Orbis Publishing Ltd

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Editorial Offices
War Machine
Aerospace Publishing Ltd
10 Barley Mow Passage
London W4 4PH

Managing Editor: Stan Morse
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Design: Rod Teasdale
Colour Origination: Imago Publishing Ltd, Thame, Oxon
Typesetting: SX Composing Ltd
Film work: Precise Litho Ltd

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Keith Fretwell
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138310

Printed in Great Britain by The Artisan Press Ltd

Distribution and marketing offices:
Orbis Publishing Ltd
Orbis House
20-22 Bedfordbury
London WC2N 4BT
Telephone: 01-379 6711
Circulation Director: David Breed
Marketing Director: Michael Joyce

WAR MACHINE
Price UK 80p. IR £1. Aus $1.95. NZ $2.25. SA R1.95. Singapore $4.50. USA and Canada $1.95

How to obtain your copies of WAR MACHINE: Copies are obtainable by placing a regular order at your Newsagent, or by taking out a subscription.

Subscription Rates
For six months (26 issues) £23.80; for one year (52 issues) £47.60. Send your order and remittance to Punch Subscription Services, Watling Street, Bletchley, Milton Keynes, Bucks MK2 2BW, being sure to state the number of the first issue required.

Back Numbers
UK & Eire: Back numbers are obtainable from your Newsagent or from WAR MACHINE Back Numbers, Orbis Publishing Limited, 20-22 Bedfordbury, London WC2N 4BT at cover price.
Australia: Back numbers are obtainable from WAR MACHINE Back Numbers, Gordon & Gotch (Aus) Ltd, 114 William Street, PO Box 767G, Melbourne, Vic 3001.
South Africa, Europe, Malta and New Zealand: Back numbers are available at cover price from your Newsagent. In case of difficulty write to the address in your country given for binders. South African readers should add sales tax.

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New Zealand: Binders are available through your local Newsagent or from WAR MACHINE Binders, Gordon & Gotch (NZ) Ltd, PO Box 1594, Wellington.
South Africa: Binders are available through any branch of Central News Agency. In case of difficulty write to WAR MACHINE Binders, Intermag, PO Box 57394, Springfield 2137.

Note: Binders and Back Numbers are obtainable subject to availability of stocks. Whilst every attempt is made to keep the price of the issues and binders constant, the publishers reserve the right to increase the stated prices at any time when circumstances dictate. Binders depicted in this publication are those produced for the **UK market only** and may not necessarily be identical to binders produced for sale outside the UK. Binders and issues may be subject to import duty and /or local taxes, which are not included in the above prices unless stated.

The WAR MACHINE published by Orbis Publishing Ltd has no connection with the WAR MACHINE published by Emjay. The latter is a magazine devoted to computer simulation gaming and further information and subscription details can be obtained from Emjay, 17 Langbank Avenue, Rise Park, Nottingham NG5 5BU, England.

Sub-machine guns of WW11

The sub-machine gun was born out of the trenches of World War I. In the confined, close-quarter fighting troops began to feel the need for some form of compact automatic weapon that would be less awkward to handle than a bayonetted rifle. Faced with this demand, manufacturers turned their hands to producing such a weapon.

Armed with the MP40 sub-machine gun, members of the Waffen SS pose for a propaganda photograph. These are French volunteers, as indicated by the tricolour arm patch.

The Italians were the first to introduce what might be termed a sub-machine gun. This was the Villar-Perosa which, while often quoted as being the first sub-machine gun, was in many ways a blind alley, for the Villar-Perosa was used only as a light machine-gun. The first true example of what was to be termed the machine-pistol or sub-machine gun was thus the German MP18. This appeared in front-line service during 1918 and to this day the MP18 remains the best example of all the attributes of the sub-machine gun.

The MP18 used a pistol cartridge (a small, relatively low-powered charge firing a small but heavy bullet). If a hand-held weapon was to be used to fire fully automatically the round fired had to be light and the pistol cartridge was the obvious choice. The MP18 fired the 9-mm Parabellum cartridge and in the years that followed this became an almost universal choice for most designs. Using a pistol cartridge also allowed the employment of an operating principle that had long been used on automatic pistols, the blow-back principle.

The blow-back principle is very simple. On the MP18 the magazine was fitted and the gun cocked by using a side-mounted lever in a slot. When the trigger was pulled it released the breech block to move forward under the energy from a large spring. As it moved forward the breech block picked up a cartridge from the feed, pushed it into the barrel chamber and once the round and breech block were in position the firing pin fired the cartridge. The recoil forces produced by the cartridge were initially overcome by the forward energy produced by the mass of the breech block and the spring, but the block remained in place long enough to 'lock' the system until the recoil forces were able to push back the breech block and its spring to their original condition. If the trigger was still pulled, the cycle began again and went on until the trigger was released.

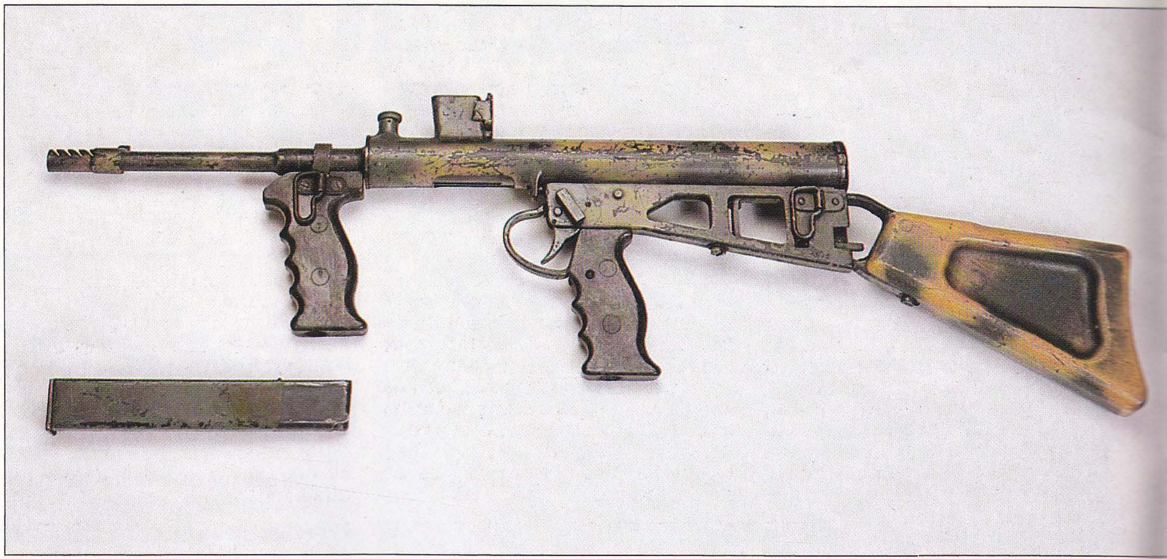
If this simple operating principle was ever abandoned, the result was usually less than satisfactory, for the mechanism would be over-complex and would have more pieces to break or jam. But if the operating system could be kept basic and light, and the MP18 was light enough to be carried and used by one man, the overall concept could be kept simple. At first this was not always realized as gunsmiths lavished their considerable skills on many of the early sub-machine gun types. When the needs of World War II arrived it did not take long for the frills to be ditched in the rush to produce serviceable weapons rapidly. Things reached the point where the resultant sub-machine guns were horrible to look at, the obvious examples being the British Sten and the American M3. But these types lent themselves to rapid and simple mass production. Welding took the place of machining from solid metal, pins took the place of time-consuming jointing methods, rivets took the place of screws and so on. At first the front-line soldiers looked askance at such products but they soon learned that they worked. Those crude weapons could produce as lethal a stream of lead as many of the more refined designs from the arsenals, they were easy to learn how to use, they were easy to maintain and their ammunition was usually easy to procure, often from the enemy.

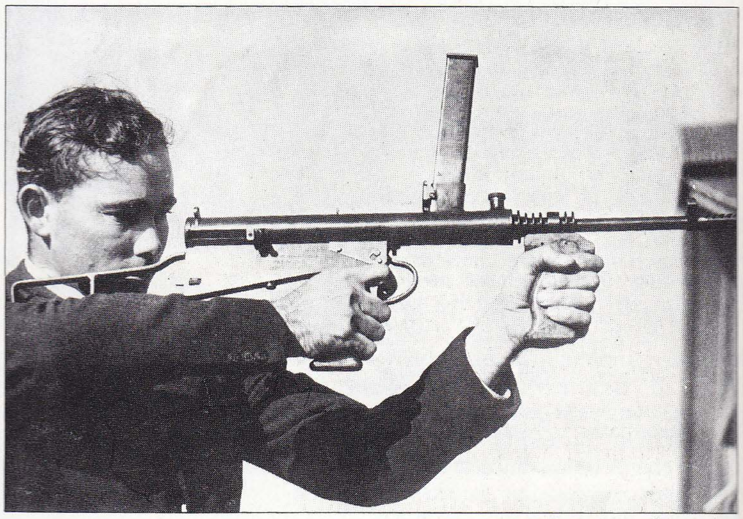
The sub-machine gun is still with us, now in many refined forms; but close examination will usually reveal the shadow of the basic MP18 lurking in its interior. From the MP18 came all the others that followed, even including the famous Thompson Gun. Designs such as the Sten, the M3, the German MP38 and the Soviet PPSh-41 all had their part to play during World War II, and their impact will be with us for years to come.

A Thompson gunner in action during the battle for Cassino. Firepower and ease of handling made the sub-machine gun ideal in the confinement of street fighting.

AUSTRALIA

Owen Gun





Above: The Owen sub-machine gun was a sturdy and reliable weapon that soon gained itself a high reputation. The example has a camouflage paint scheme.

Right: The Australian Owen sub-machine gun's most prominent recognition feature was the vertically-mounted box magazine. The example shown here is one of the early production models.

It took some time and some fairly desperate measures before Lieutenant Evelyn Owen was able to persuade the Australian military authorities to adopt his design of sub-machine gun in 1940. At the time the Australian army had little or no interest in the weapon and by the time they realized the importance of the weapon they expected to receive all the Sten guns they required from the United Kingdom. It took some time before they appreciated the fact that they were going to receive no Sten guns as the British army wanted all that could be produced. So they decided after much procrastination to adopt the **Owen Gun**, but even then they were not sure in what calibre. Consequently the first trials batches were produced in four calibres before the universal 9-mm was adopted.

The Owen Gun can be easily recognized by the magazine, which points vertically upwards over the tubular gun body. This odd-seeming arrangement was apparently chosen for no other reason than that it worked, and it must be said that it worked very well to the extent that once the Australian soldiers got their hands on the type they preferred it to all others, and the Owen Gun was kept in service until well into the 1960s and its successor, the X-3, still retains the overhead magazine. The rest of the gun was fairly conventional and very robust to the point where it seemed to be able to take all manner of punishment and withstood being dropped in mud, dust, water and just about anything else. As production increased various changes were introduced to the design. The early fins around the barrel were removed and some changes were made to the butt, which could be found in versions with just a wire skeleton, an all-wood design, and one version that was half-outline and half wood. One feature of the Owen that was unique to it, apart from the overhead magazine, was that the barrel could be quickly removed for changing. Exactly why this feature was incorporated is uncertain, for it would have taken a long period of firing for the barrel to become unusably hot, but the feature was retained through the design life of the weapon. Another odd point regarding the Owen was that once in service they were often painted in camouflage schemes to suit the local terrain. For the Australian army (and the Owen was used by no other forces) that meant the hot and sweaty jungles of New Guinea, where the Australian soldiers found the Owen ideal for the close-quarter combat that the jungles enforced. It was true that the Owen was rather heavier than most comparable models but the forward-mounted grip and the pistol grip made it easy to handle.

The top-mounted magazine had one slight disadvantage for the firer as the magazine position meant that the sights had to be off-set to the right side of the body, an awkward arrangement but one that mattered little once the weapon was used in action for, like most sub-machine guns, the Owen was almost always fired from the hip.

Production of the Owen ceased in 1945 but in 1952 many were virtually rebuilt and provision was made for a long bayonet to be fitted to the muzzle; some versions made in 1943 used a much shorter bayonet that fitted over the muzzle with an almost unique tubular mount but they were not widely issued.

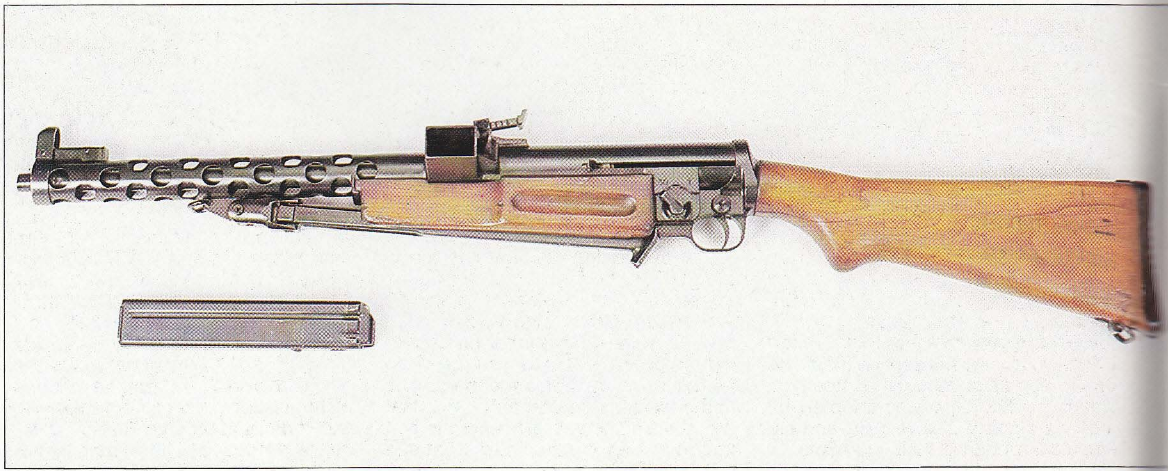
Specification:
Calibre: 9 mm
Length: 813 mm (32 in)
Length of barrel: 250 mm (9.84 in)
Weight loaded: 4.815 kg (10.6 lb)
Magazine: 33-round vertical box
Rate of fire, cyclic: 700 rpm
Muzzle velocity: 420 m (1,380 ft) per second

CZECHOSLOVAKIA

ZK 383

The Czech **ZK 383** is one of those sub-machine guns that is now little known in the West for the simple reason that it was little used outside Eastern Europe and its combat use was mainly limited to the war against the Soviet Union. However, the ZK 383 was a very important weapon type for its time and it was considered good enough to stay in production from the late 1930s until 1948.

First designed during the early 1930s, the ZK 383 went into production



The Czech ZK 383 was very well made from machined parts and had such luxuries as a bipod and a variable rate of fire. There was even a quick-change barrel. The bulk of these weapons was later produced for the German Waffen SS, who found it a heavy but reliable weapon.

at the famous Czech Brno arms plant, known for the later introduction of what was to be the Bren gun. The ZK 383 was a relatively large and heavy weapon for the sub-machine gun class, a feature emphasized by uncommon application of a bipod under the barrel on some models. This bipod was the result of the Czech army's tactical philosophy, for it regarded the weapon as a form of light machine-gun, in direct contradiction of the usually accepted role of a close-quarter combat weapon. This odd approach was further emphasized by the use of what was one of the ZK 383's oddest features in the form of a capability for two rates of fire. The ZK 383 could fire at the rate of 500 or 700 rpm, the fire rate being altered by the addition or subtraction of a small 0.17-kg (0.37-lb) weight to the breech block – with the weight removed the breech block could move faster and thus the rate of fire could be increased. The slower rate of fire was used when the ZK 383 was used with its bipod as a light machine-gun, and the faster fire rate when the ZK was carried as an assault weapon.

But that was only the Czech army's point of view, and the feature does not appear to have been used much by the other customers for the weapon. The Bulgarian army adopted the type as their standard sub-machine gun (it used the ZK 383 until at least the early 1960s), but by far the largest number of ZK 383s were produced after 1939 for the German army. When they took over Czechoslovakia in 1939 the Germans found the ZK 383 production line still intact, and it was a sensible move as far as they were concerned to keep it intact for their own uses. The Brno factory was taken over for SS weapon production and thus the ZK 383 output was diverted to the Waffen SS, who used the weapon only on the Eastern Front. The Waffen SS examples were all known as the **vz 9** (vz for vzor, the Czech for model) and the Waffen SS found it effective enough for it to become one of their standard weapons. Numbers were kept in Czechoslovakia for use by the Czech civil police who had their own version, the **ZK 383P** which was produced without the bipod.

The only nations other than Czechoslovakia, Bulgaria and Germany that purchased the ZK 383 were Brazil and Venezuela, and even then the numbers involved were not large. Apart from the use in Eastern Europe the ZK 383 had few points to attract attention and in many ways it was too complicated for the role it was called upon to play. The Czech army's predilection for the design as a light machine-gun led to all manner of detail extras that the weapon did not need. The dual rate of fire feature has already been mentioned, as has the bipod, but the sub-machine gun does not really need a complex barrel-change mechanism, an all-machined mechanism made from the finest steels available or an angled breech block return spring angled into the butt. The ZK 383 had all these, making it a very reliable sound weapon but one that was really too complex for its role.

Specification:
Calibre: 9 mm
Length: 875 mm (34.45 in)
Length of barrel: 325 mm (12.8 in)
Weight loaded: 4.83 kg (10.65 lb)
Magazine: 30-round box
Rate of fire, cyclic: 500 or 700 rpm
Muzzle velocity: 365 m (1,200 ft) per second

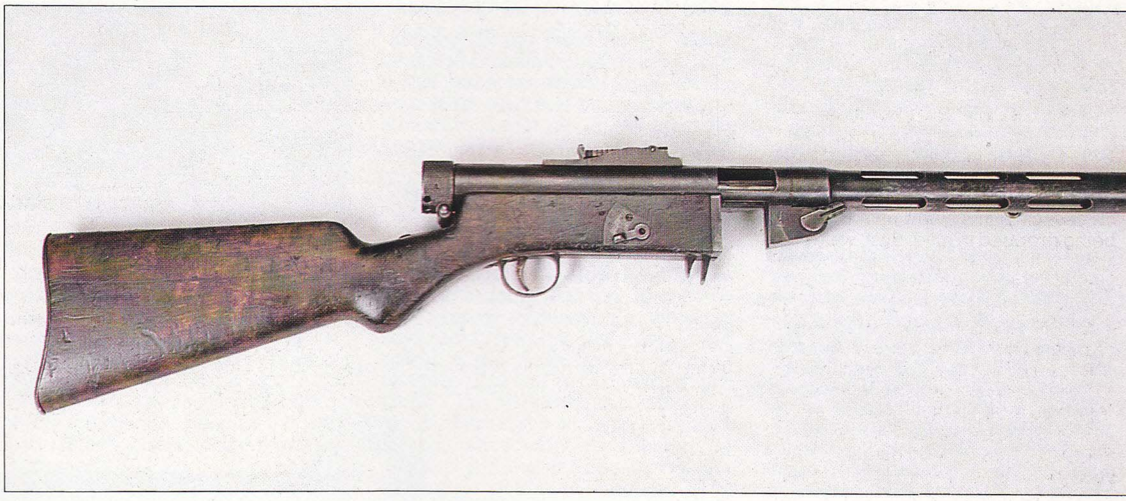
FINLAND

Suomi m/1931

The **Suomi m/1931** is now little known but in its day it was one of the most sought-after and admired sub-machine guns produced anywhere. The design of this weapon went back to the early 1920s and was almost certainly influenced by some German weapon designers who used Finland as a means of escaping the turmoil and uproar of post-war Germany. Using the influence and advice of such Germans the Finns gradually produced a series of very sound and effective sub-machine guns that resulted in the m/1931.

As sub-machine gun designs go there is little remarkable with the m/1931, for it used a conventional blow-back action and an orthodox layout. Where it did score over many existing designs was that it was extremely well made, almost to the point of lavishness in the quality of material used and the excellence of the machining, and the other point was the feed systems employed. These feed systems used a number of magazines that were so effective that they were extensively copied later, even by the Soviets who normally preferred their home-produced designs. There were two main versions, one a 50-round vertical box magazine and the other a 71-round drum magazine. In the box magazine the normal lengthy bulk of 50 rounds of ammunition was overcome by having the magazine split into two vertical columns. Rounds were fed from one column and then the other. In action this feed system was much favoured as it enabled a soldier to carry into action far more ready rounds than would be possible with a conventional magazine (despite this there was a normal 30-round box magazine for the Suomi).

The m/1931 was produced for the Finnish army in some numbers and it proved itself in action during the 1940 Russian invasion of Finland. There were several export models of the m/1931, some of them with small bipods under the barrel or body, and these were purchased by Sweden and Switzerland, who both set up their own production lines, as did a company in Denmark. The type was adopted by the Polish police before 1939, and examples popped up during the Spanish Civil War on both sides. Since then the m/1931 has kept appearing up all over the place whenever conflicts arise. It is still in limited service in Scandinavia to this day and this longevity can be explained by two simple factors. One is that the m/1931 is so well made that it just will not wear out. The same sound manufacture also explain the reliability, for the m/1931 is one of those weapons that will work under any conditions without ever seeming to go wrong, and as mentioned above the feed system for the ammunition is almost legendary in its reliability. These two factors alone explain the high regard shown to the m/1931 in the past, but there was another factor. When the m/1931 was produced no pains were spared on detail machining and such care was taken on this that the whole of the gun, the body and bolt included, were machined from the solid metal. Consequently the gun was, and still is, very accurate for its type. Most sub-machine gun types are accurate only to a few yards and most are almost useless at range over 50 m (55 yards). The m/1931 can be used accurately at ranges up to 300 m (330 yards). In relative numbers few were used during World War II but the influence of the design can be detected in many war-time models. The design was licence-produced in Switzerland for the Swiss army during 1943.



Above: The Suomi m/1931 was one of the most well-manufactured sub-machine guns ever made, for practically every part was machined from solid metal.

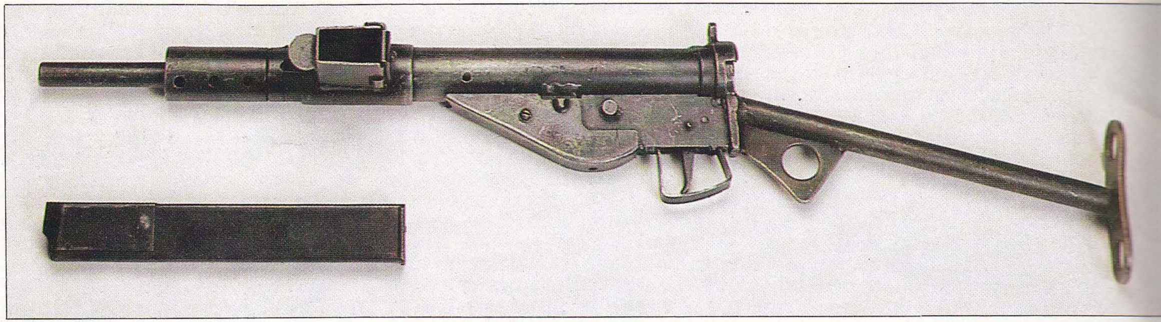
Right: The Suomi m/1931 in action, fitted with the 71-round magazine. Unlike many other sub-machine guns the m/1931 had a long barrel that was accurate enough for aimed fire at most combat ranges.

Specification:
Calibre: 9 mm
Length (butt extended): 870 mm (34.25 in)
Length of barrel: 314 mm (12.36 in)
Weight loaded (drum magazine): 7.04 kg (15.52 lb)
Magazine: 30- or 50-round box, or 71-round drum
Rate of fire, cyclic: 900 rpm
Muzzle velocity: 400 m (1,310 ft) per second

UK

Sten sub-machine guns

After the Dunkirk evacuation of mid-1940 the British army had few weapons left. In an attempt to re-arm quickly the military authorities put out an urgent request for simple sub-machine guns that could be produced in quantity, and using the concept of the MP38 as an example the designers went to work. Within weeks the results were adopted. It was the product of two designers, Major R.V. Shepherd and H.J. Turpin who worked at the Enfield Lock Small Arms Factory, and from these three names came the universally-accepted name **Sten** for the new weapon.



Above: The Sten Mk II was one of the most widely-used of all the Allied sub-machine guns. It looked crude but it worked, it could be stripped down for easy concealment, and it was available in quantity.

The first result was the **Sten Mk I**, which must be regarded as one of the unloveliest weapon designs of all time. It was designed for production as quickly and cheaply as possible using simple tools and a minimum of time-consuming machining, so the Sten was made up from steel tubes, sheet stamping and easily produced parts all held together with welds, pins and bolts. The main body was a steel tube and the butt a steel framework. The barrel was a steel drawn tube with either two or six rifling grooves roughly carved. The magazine was again sheet steel and on the Sten Mk I the trigger mechanism was shrouded in a wooden stock. There was a small wooden foregrip and a rudimentary flash hider. It looked horrible and caused some very caustic comments when it was first issued, but it worked and the troops soon learned to accept it for what it was, a basic killing device produced in extreme circumstances.

Right: The Sten was one of the first weapons issued to the newly-formed airborne troops of the British army, and this example is unusual in being fitted with a small spike bayonet.

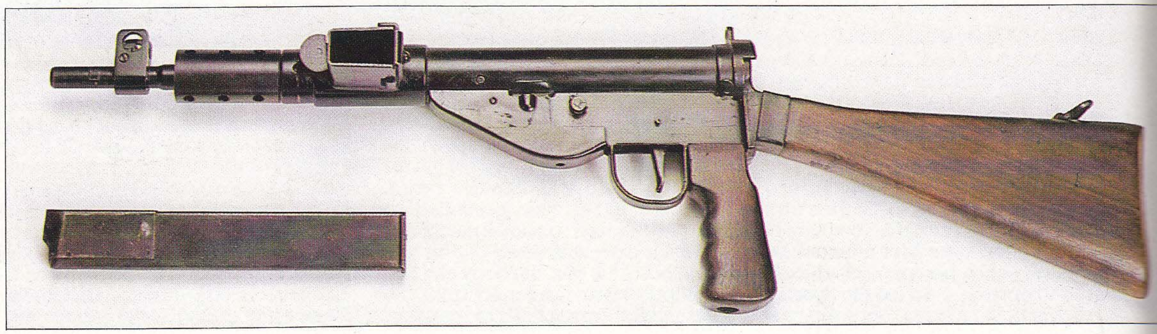
The Sten Mk I was produced to the tune of about 100,000 examples all delivered within months. By 1941 the **Sten Mk II** was on the scene and this was even simpler than the Mk I. In time the Sten Mk II became regarded as the 'classic' Sten gun and it was an all-metal version. Gone was the wooden stock over the trigger mechanism, replaced by a simple sheet-metal box. The butt became a single tube with a flatt buttplate at its end. The barrel was redesigned to be unscrewed for changing and the magazine housing, with the box magazine protruding to the left, was designed to be a simple unit that could be rotated downwards once the magazine was removed to keep out dust and dirt. The butt could be easily removed for removing the breech block and spring for cleaning. By the time all these parts (barrel, magazine and butt) had been removed, the whole weapon occupied very little space and this turned out to be one of the Sten's great advantages. When the initial needs of the armed forces had been met, from several production lines, including those set up in Canada and New Zealand, the Sten was still produced in tens of thousands for paradrop into occupied Europe for use by resistance forces and partisans. There it found its own particular place in combat history, for the very simplicity of the Sten and the ease with which it could be broken down for hiding proved to be a major asset and the Germans came to fear the Sten and what it could do. The Germans learned, as did many others, that the bullet from a Sten was just as lethal as a bullet from something more fancy.

A silenced version of the Sten Mk II was produced in small numbers for Commando and raiding forces as the **Sten Mk IIS**, and then came the **Sten Mk III**. This was basically an even simpler version of the original Mk I as its barrel could not be removed and it was encased in a simple steel-tube barrel jacket. Again, tens of thousands were produced and were widely used.

The **Sten Mk IV** was a development model intended for parachute troops but it was not placed into production. By the time the **Sten Mk V** was on the scene things were going better for the Allies and the Mk V could be produced with rather more finesse. The Mk V was easily the best of the Stens for it was produced to much higher standards and even had such extras as a wooden butt, forestock and a fitting for a small bayonet. It had the foresight of the Lee-Enfield No. 4 rifle and the metal was even finished to a high degree, whereas the earlier marks had their metal left in a bare state with a minimum of fine finish. The Mk V was issued to the Airborne Forces in 1944, and after World War II it became the standard British army sub-machine gun.

Right: Street fighting in the Mediterranean. This example has had a non-standard foregrip added to enhance handling.

The Sten was a crude weapon in nearly every way, but it worked and it could be produced in large numbers at a time when it was desperately needed. In occupied Europe it was revealed as an ideal resistance weapon and all over the world underground forces have been busy copying the design almost direct. The Germans even produced their own copies in 1944 and 1945. It was one of the more remarkable weapons of World War II.



Below: By the time the Sten Mk V was produced there was time for some finesse to be added to the basic design. While the original outline was retained a wooden butt and pistol grip and a No. 4 rifle foresight had been added.

Specification:

Sten Mk II

Calibre: 9 mm

Length: 762 mm (30.00 in)

Length of barrel: 197 mm (7.75 in)

Weight loaded: 3.7 kg (8.16 lb)

Magazine: 32-round box

Rate of fire, cyclic: 550 rpm

Muzzle velocity: 365 m (1,200 ft) per second

Arming the French Resistance

It took a few years to organize the French Resistance movements after the fall of France in 1940. For about 18 months very little could be achieved, mainly as a result of the morale shock that followed the German occupation, but gradually a few bold souls started to form the core of a number of small groups determined to carry on the war in some way. This underground movement towards resistance had been presupposed in London and elsewhere by the establishment of some low-priority cadres of unconventional warfare specialists who gradually started to land agents and subversives in occupied France to discover how people were thinking and to determine what armed support there might be for the establishment of a guerrilla warfare movement.

The London-based organizations (there were initially several) were grouped under an organization known as the Special Operations Executive, or SOE. Headquartered in Baker Street, this organization was able to function as it had a virtual direct access to the Prime Minister, who was very keen to stir up any underground warfare movements to harry the German occupation forces. Using this access to high places, SOE was able to corner a far greater share of weapons and other facilities than might otherwise have been the case in a more orthodox administration, and the organization took full advantage of this.

Infiltrators from SOE

The general plan was for the higher echelons of SOE to infiltrate agents into occupied France over a number of routes from direct coastal landings to open crossings of the border with unoccupied Vichy France. Once inside the occupied zone these agents established the lie of the land and generally travelled about making contacts, assessing potential sabotage targets and establishing small cells of potential resisters. Once these had been established London then trained and sent in permanent agents to organize and train the cells. These agents were often Free French or other locals who had escaped in 1940 or who came from some of the French colonies, but once established in the occupied zone they called on London to send in equipment.

The equipment sent into France ranged from radios to explosives and weapons. Small amounts of material were landed on secluded stretches of coastline, but the bulk of the material was paradropped from Royal Air Force bomber aircraft; sometimes small transport aircraft landed to deliver special loads. The usual method was to use aircraft such as the Armstrong Whitworth Whitley or the Vickers Wellington to drop special containers. These were of two types, the Type 'C' and the Type 'H', the latter being the more important as there were several standard loads already laid out for them: the H1, for instance, was always used to drop explosives and their accessories such as detonators and exploders, while the H2 always carried a load of Sten guns; and the H3 could be used to drop rifles or Bren guns, the H4 to drop incendiary materials and the H5 to deliver a wide range of sabotage equipment. The Type 'C' container was used for just about everything else.

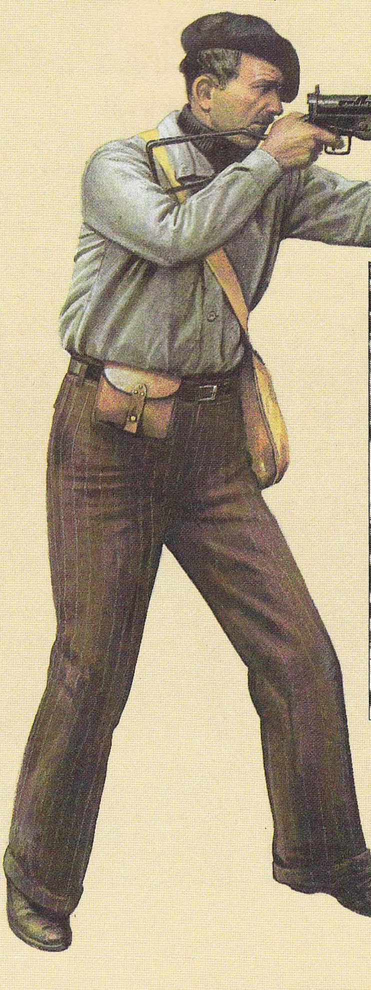
Supply drops were arranged by radio and a team was always on the ground to pick up the containers and then immediately to distribute and hide their contents. Contents were supposed to be packed to facilitate this distribution and it was here that easily hidden weapons such as the Sten gun came into their own. A Sten gun could be easily broken down into its component parts and concealed in all manner of small places, from where it could be retrieved for use. Operations could be either controlled from London or organized locally. In both cases preparation was the keyword, with careful pre-placing of arms and equipment well before the operation. Most Resistance operations involved the use of small amounts of explosives, with weapons used only for self-protection.

It was not until 1944 that widespread and large-scale Resistance operations were mounted in support of the Normandy landings. Again, well planned in advance and coordinated from London, such operations were aimed at cutting communications with the coastal areas, especially around Normandy and the Pas de Calais, and involved the destruction of railways, telephone lines and bridges. Ambushes were made on German patrols with the Stens and the Brens; in overall terms the plan to disrupt the German forces, isolate them by removing their communications and generally put them off balance, succeeded.

Photographs of the French Resistance in action are few and far between, so it seems safe to suggest that this is a posed picture taken during 1944. It shows two Stens and a shotgun in use, a fairly typical Resistance weapon combination.

But it was done at a considerable cost. Apart from the resisters who were lost on the actual operations, the Germans almost always retaliated by the taking and execution of hostages and the destruction of property. Many French men and women thus lost their lives in the Resistance cause, but their loss only strengthened French resolve and gave back to the nation a measure of self-respect that had been lost in 1940.

Thus the efforts of SOE in London had an effect far out of proportion to its numbers. The Resistance was able to make a definite contribution to the overall war effort and the Sten gun became a virtual symbol of resistance.

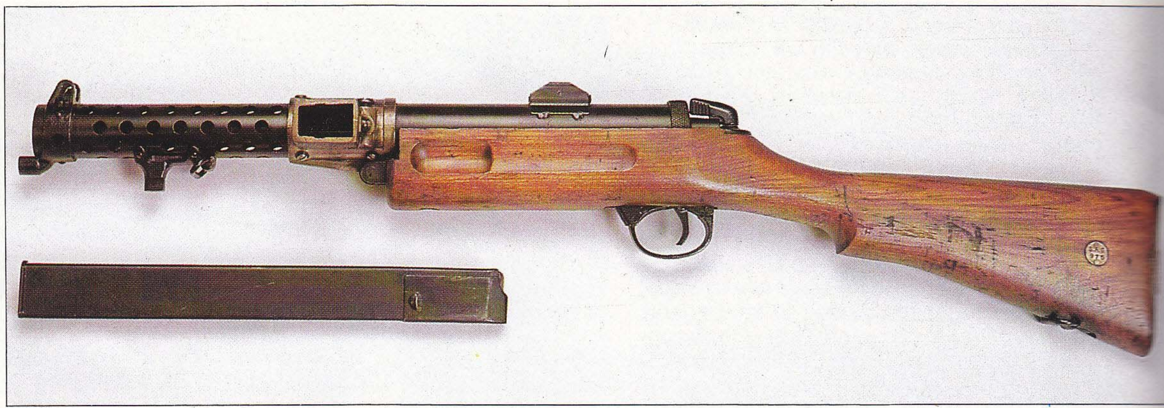


Left: The Sten was well suited to Resistance-style ambushes and nuisance raids. While giving more firepower to the Maquis, it could be broken down into components for easy concealment.

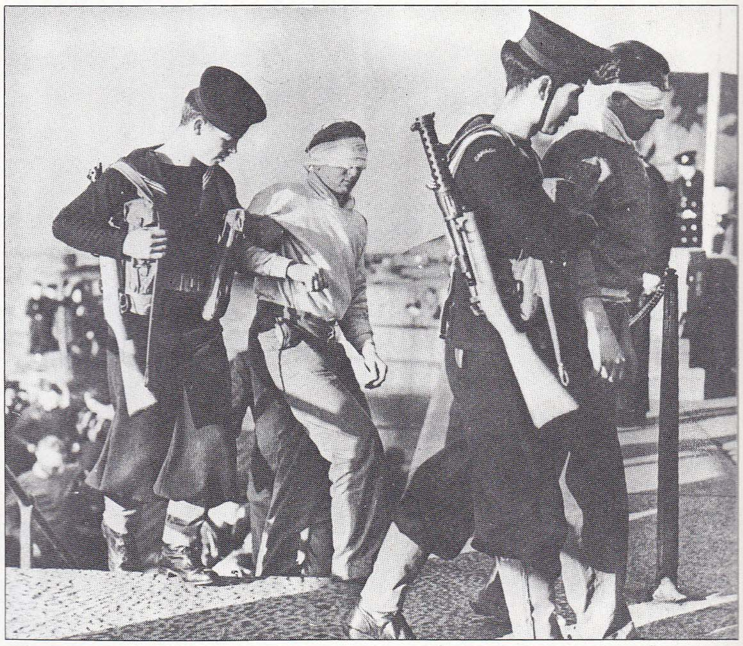
Above: Maquis in the Haute Loire conducting a weapon training session using the Sten Mk II as the subject. This Sten has the steel 'outline' butt in place of the more usual 'T-shape'. Both types could be easily removed.

UK

Lanchester sub-machine gun



Above: Obviously based on the German MP 28, the Lanchester was ideally suited to the rough-and-tumble of shipboard life. It had a one-piece wooden stock based on the outline of the Lee-Enfield No. 1 Mk 3 rifle and there was a bayonet lug under the muzzle. The brass magazine housing can be seen.



Right: Lanchesters in a typical naval environment as captured U-boat personnel are escorted ashore in a Canadian port – the blindfolds were a normal procedure. The Lanchesters are carried using Lee-Enfield rifle slings.

In 1940, with the Dunkirk evacuation completed, the Royal Air Force decided to adopt some form of sub-machine gun for airfield defence. With no time to spare for the development of a new weapon it decided to adopt a direct copy of the German MP28, examples of which were to hand for the necessary copying. The period was so desperate that the Admiralty decided to join the RAF in adopting the new weapon; by a series of convoluted happenings the Admiralty alone actually took the resultant design into service.

The British MP28 copy was given the general designation **Lanchester** after one George Lanchester, who was charged with producing the weapon at the Sterling Armament Company at Dagenham, the same company that later went on to produce the Sterling sub-machine gun that is now the general standard weapon for so many armed forces. The Lanchester emerged as a sound, sturdy weapon that in many ways was ideal for the type of operations required of it by boarding and raiding parties. It was a very solid weapon, in many ways the complete opposite of its direct contemporary the Sten, for the Lanchester was a soundly engineered piece of weaponry with all the trimmings of a former era. Nothing was left off from the gunsmith's art. The Lanchester had a well-machined wooden butt and stock, the blow-back mechanism was very well made of the finest materials, the breech block well machined, and, to cap it all, the magazine housing was made from solid brass. A few typical British design details were added, such as a mounting on the muzzle for a long-bladed British bayonet (very useful in boarding party situations) and the rifling differed from the German original in details to accommodate the different types of ammunition the Lanchester had to use.

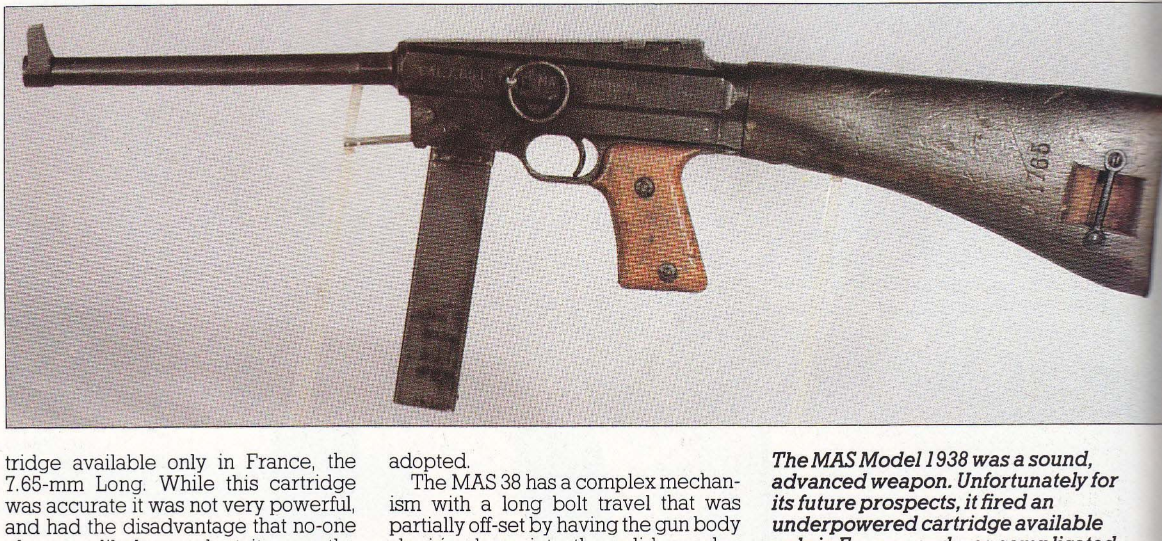
The magazine for the Lanchester was straight and carried a useful load of 50 rounds. Stripping was aided by a catch on top of the receiver and the very first models could fire either single-shot or automatic. That model was the **Lanchester Mk I** but on the **Lanchester Mk I*** this was changed to full automatic fire only, and many Mk Is were converted to Mk I* standard at RN workshops.

The Lanchester was an unashamed copy of a German design but it gave good service to the Royal Navy throughout the war and for many years after. Many old sailors still speak of the Lanchester with respect; not with affection, for it was a heavy weapon and it had one rather off-putting feature: if the butt was given a hard knock or jar while the gun was cocked and loaded it would fire. The last example left Royal Navy use during the 1960s and the type is now a collector's item.

Specification:
Calibre: 9 mm
Length: 851 mm (33.50 in)
Length of barrel: 203 mm (8.00 in)
Weight empty: 4.34 kg (9.57 lb)
Magazine: 50-round box
Rate of fire, cyclic: 600 rpm
Muzzle velocity: about 380 m (1,245 ft) per second

FRANCE

MAS Model 1938



Often quoted as the **MAS 38**, this French sub-machine gun was first produced at St Etienne in 1938, hence the model number. The MAS 38 was the outcome of a long period of development, and was the follow-on from a model produced in 1935. But it must be stated that the development period was well spent, for the MAS 38 proved to be a sound enough weapon well in advance of its period. There were some rather odd features about the MAS 38, however. One was that it was rather complicated and another that it fired a cartridge produced only in France. Both these features can be explained by the period when it was designed. At that time there appeared to be no reason to make the weapon as simple as possible for existing production methods seemed adequate to churn out the numbers required, and at the time such numbers were not very high. The calibre can be explained by the fact that it was available at the time and so the MAS 38 had a calibre of 7.65 mm and used a cartridge available only in France, the 7.65-mm Long. While this cartridge was accurate it was not very powerful, and had the disadvantage that no-one else was likely to adopt it once the 9-mm calibre had been universally adopted.

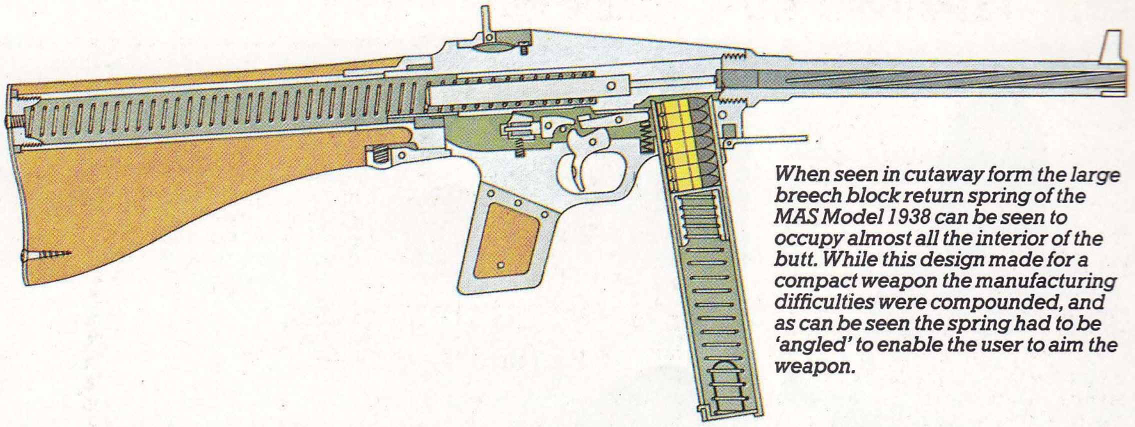
The MAS 38 has a complex mechanism with a long bolt travel that was partially off-set by having the gun body sloping down into the solid wooden butt. The cocking handle was separate

The MAS Model 1938 was a sound, advanced weapon. Unfortunately for its future prospects, it fired an underpowered cartridge available only in France, and was complicated to manufacture.

from the bolt once firing started, a good feature but one which introduced complexity into the design and manufacture. Another good point was a flap over the magazine housing that closed as the magazine was withdrawn. While this kept out dust and dirt very few other designs had this feature and most of them managed to work perfectly well without it.

In fact the MAS 38 turned out to be rather too good for the customer, who at first decided that it did not want a sub-machine gun after all. The French army turned down the weapon when it was first offered, and the first production examples went to some of the more para-military members of one of the French police forces. When hostilities did start in 1939, the French army soon changed its mind and ordered large quantities, but the complex machining that went into the MAS 38 resulted in a slow rate of introduction into service, and the French army was driven to ordering numbers of Thompson sub-machine guns from the USA. These arrived too late to make any difference to the events of 1940 and the French army capitulated. When the French forces rearmed under the Vichy regime the MAS 38 was kept in production, and in fact the weapon was kept in production until 1949, and it was used in the Indo-China War.

The MAS 38 never got the recognition it deserved. It was rather too complicated, fired an odd cartridge and it was never possible to produce it in quantity when it was required. Consequently it is now little known outside France and few, if any, modern weapon designs owe anything to its influence. The only armies to use the MAS 38, other than some of the ex-French colonies, were the Germans who captured enough in 1940 to issue them to their garrison force stationed in France.



When seen in cutaway form the large breech block return spring of the MAS Model 1938 can be seen to occupy almost all the interior of the butt. While this design made for a compact weapon the manufacturing difficulties were compounded, and as can be seen the spring had to be 'angled' to enable the user to aim the weapon.

Specification:
Calibre: 7.65 mm
Length: 623 mm (24.53 in)
Length of barrel: 224 mm (8.82 in)
Weight loaded: 3.356 kg (7.40 lb)
Magazine: 32-round box
Rate of fire, cyclic: 600 rpm
Muzzle velocity: 350 m (1,150 ft) per second

SWITZERLAND

Steyr-Solothurn S1-100

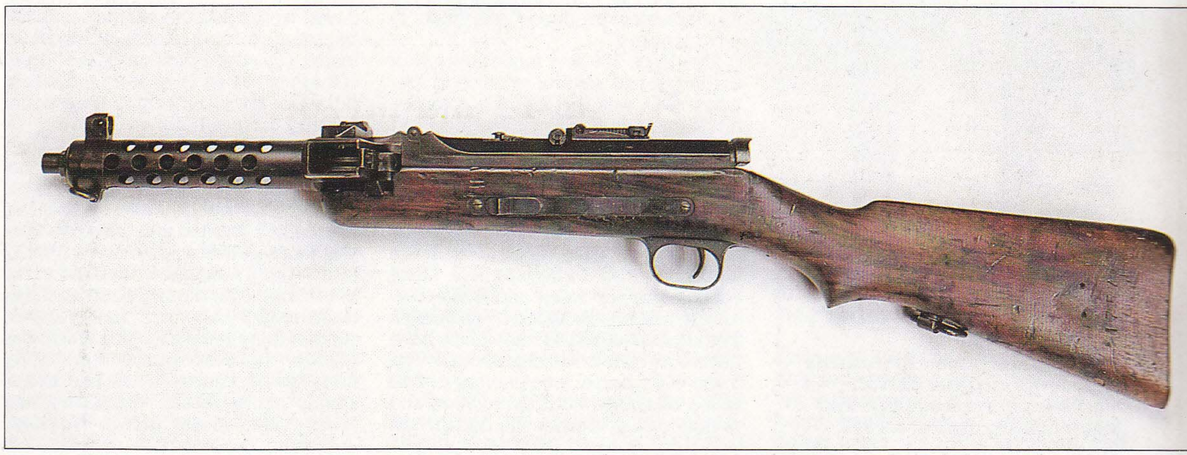
Although the Steyr-Solothurn is described as a Swiss weapon, for it was mainly produced in Switzerland, it was originally an Austrian design produced by Steyr who took over the Swiss Solothurn concern to produce weapon designs at a time when they were forbidden to do so by the terms of the 1919 Versailles Treaty. Even then the design was originally German (actually a Rheinmetall product) but had been switched to Austria for full development during the 1920s.

In its full production form this sub-machine gun was known as the **Steyr-Solothurn S1-100** and by 1930 the design was being produced mainly for export purposes. As with so many other designs of the period, it was based on the general outlines and principles of the German MP18 but by the time the Swiss manufacturers had finished with their development the design had reached a high point of refinement and detail manufacture. The S1-100 was an excellent product that was robust, reliable and adaptable, for the export market meant that the model had to be produced in a whole host of calibres and with a seemingly endless string of accessories and extras.

The S1-100 was produced in no less than three separate variations of the 9-mm calibre. Apart from the usual 9-mm Parabellum, the weapon was produced in 9-mm Mauser and 9-mm Steyr, the latter specially produced for the S1-100. Exports to China, Japan and South America were produced in 7.63-mm Mauser calibre, and the Portuguese purchased a large batch chambered for the 7.65-mm Parabellum cartridge. The extras were many and varied, with perhaps the most outlandish being a tripod to convert the weapon into what must have been a rather ineffective light machine-gun, though some of these were sold to China during the mid-1930s. There were also various forms of bayonet-securing devices and several barrel lengths were produced, some of them very long indeed for what were only pistol cartridges. Another Steyr-Solothurn selling ploy was to present the S1-100 to a customer packed in individually-fitted chests containing not only the weapon but all manner of special magazines, special cleaning tools, spare parts, etc.

By the mid-1930s the S1-100 was the standard sub-machine gun of the Austrian army and police force, and when the Germans took over the state in 1938 they also took over the Austrian army armoury. Thus the S1-100 became the German **MP34(ö)**, which must have caused some confusion with the previously mentioned Bergmann MP 34. After a short period of front-line German service the confusion of no less than three types of 9-mm ammunition to be supplied for the type was too much even for the adaptable German army supply network and the MP34(ö) was relegated to German military police use; it was also retained by what was left of the Austrian police forces.

Today the S1-100 is still used in odd corners of the world, but only in very small numbers. Perhaps the most combat seen by the type was in China where at one point the S1-100 was in use by both the Chinese and Japanese armies. The latter even produced their own copy at one point and used some of the design's features as the basis for their own 8-mm Type 100.



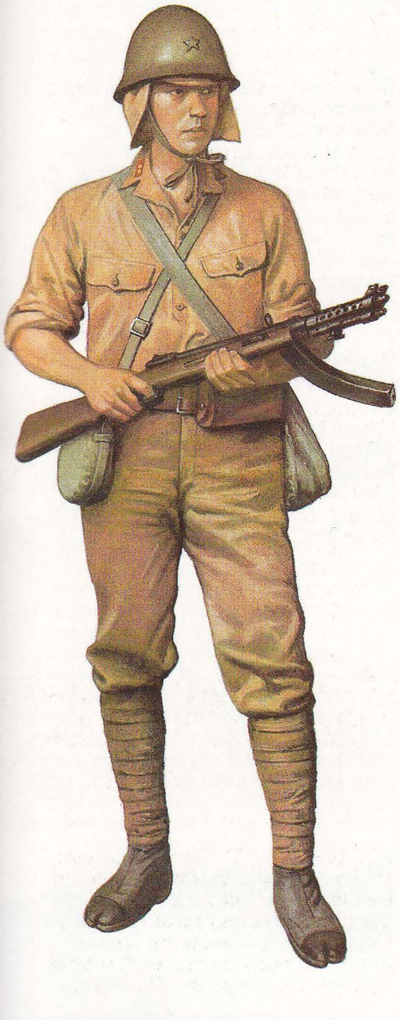
Above: The Steyr-Solothurn S1-100 was an Austrian version of the German MP18 produced during the 1920s and 1930s mainly for commercial sale on the export market. The type was well made and could be supplied with a range of accessories including tripods, bayonets and oversize magazines.

Right: The Steyr-Solothurn S1-100 is seen here in a drill-book position, mainly because the picture has been taken from a German manual produced for the type after the Germans had taken over Austria and its arsenal during 1938.

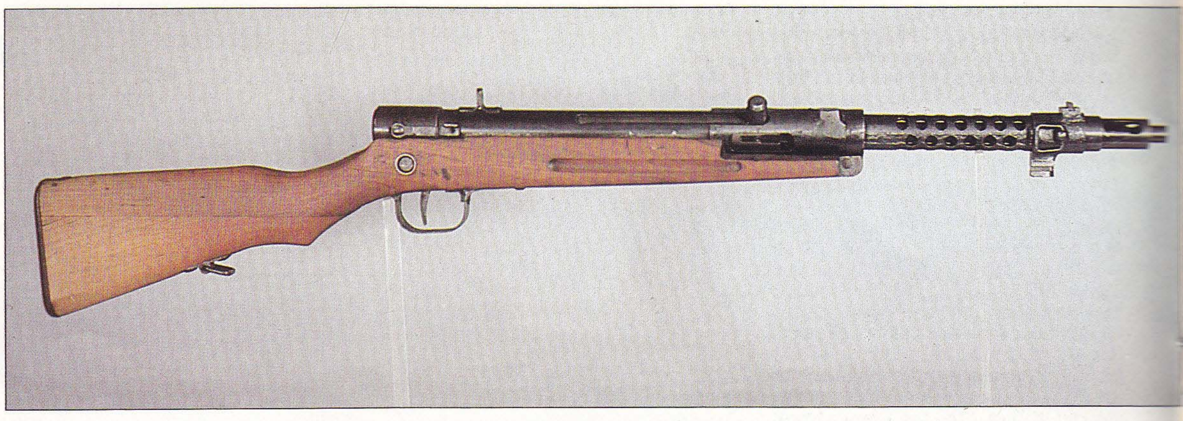
Specification:
S1-100 (9-mm Parabellum version)
Calibre: 9 mm
Length: 850 mm (33.46 in)
Length of barrel: 200 mm (7.87 in)
Weight loaded: 4.48 kg (9.88 kg)
Magazine: 32-round box
Rate of fire, cyclic: 500 rpm
Muzzle velocity: 418 m (1,370 ft) per second

JAPAN

Type 100



This Japanese private first class is armed with the Type 100 sub-machine gun. He is equipped for jungle fighting, typical of 1942.



The Type 100 was not designed for ease of production and despite some production 'short cuts' such as spot welding and stampings there were never enough to meet demands.

The Japanese were surprisingly late on the sub-machine gun design scene, a fact made all the more remarkable considering their experience gained in the protracted campaigns in China before 1941 and the number of different overseas designs imported for service use or examination. It was not until 1942 that the first example of what had been several years of low-priority development left the Nambu production lines in the form of the **Type 100**, a sound but unremarkable design that was to be the only sub-machine gun the Japanese produced and used in any numbers.

The Type 100 was moderately well made but had several rather odd features. One was the use of a complex ammunition feed device that ensured that a round was fully chambered before the firing pin would operate. The exact purpose of this feature is rather uncertain (other than the safety aspect for the firer) for the cartridge used by all the Type 100 variants was the underpowered 8-mm Japanese pistol round, a rather weak and ineffective choice that was not aided by its being a bottle-shaped round that must have added its own feed complexities. The Type 100's barrel was chrome-plated to aid cleaning and reduce wear, and to add to such niceties the design had complex sights and a curved magazine. Other oddities were the use of a complicated muzzle brake on some models and the use of a large bayonet-mounting lug under the barrel. Some versions also had a bipod.

There were three different versions of the Type 100. The first is described above. The second had a folding butt stock for use by paratroops: the stock was hinged just behind the gun body to fold along the side of the weapon. While this no doubt made the weapon handy for carrying and paradropping, it also weakened the weapon in combat situations and relatively few were made. The third version of the Type 100 appeared in 1944 at a time when demands for sub-machine guns were coming from all fronts. In order to speed up manufacture, the basic Type 100 was greatly simplified and in the result the design was lengthened slightly. The wooden stock was often left roughly finished and the rate of fire was increased from the early 450 rpm to 800 rpm. The sights were reduced to little more than aiming posts and the large muzzle lug for a bayonet was replaced by a simpler fitting. At the muzzle, the barrel protruded more from the perforated jacket and had a simple muzzle brake formed by two ports drilled in the barrel. Welding, often rough, was used wherever possible. The result was a much cruder weapon compared with the earlier version, but one that was sound enough for its purpose.

The main problem for the Japanese by 1944 lay not so much in the fact that the Type 100 was not good enough, but that the Japanese lacked the industrial capacity to turn out the huge numbers demanded. Consequently the Japanese troops had to fight their last-ditch defensive campaigns at a permanent disadvantage against the better-armed Allied troops.

Specification:

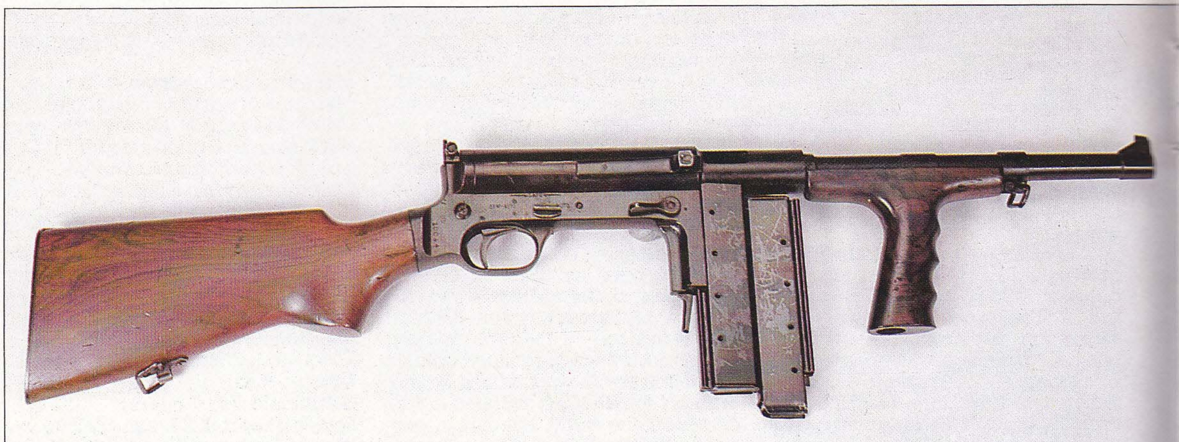
Type 100 (1944 version)
Calibre: 8 mm
Length: 900 mm (35.43 in)
Length of barrel: 230 mm (9.06 in)
Weight loaded: 4.4 kg (9.70 lb)
Magazine: 30-round curved box
Rate of fire, cyclic: 800 rpm
Muzzle velocity: 335 m (1,100 ft) per second

USA

UD M'42

In accounts of the American sub-machine gun scene between 1939 and 1945 one weapon is often not mentioned at all, and that is the sub-machine gun known under a number of names but usually called the **UD M'42**. This weapon was designed in the days just prior to World War II as a commercial venture in 9-mm calibre. It was ordered under rather odd circumstances by an organization known as the United Defense Supply Corporation, a US government body that ordered all manner of items for use overseas, but the main point of its existence was that it was an American secret service 'front' for all forms of underground activities.

Exactly why the United Defense (hence UD) concern ordered the design that was produced by the Marlin Firearms Company is now not known, but the name 'Marlin' was subsequently often given to the weapon that became the UD M'42. The general impression given at the time was that the weapons were to be shipped to Europe for use by some underground organizations working for the US in-



The UD M'42 was not accepted as an official US service weapon, but numbers were purchased for issue to some odd undercover and special mission units. It was a very well made and finished weapon and was popular with its users.

terest, but events in Europe overtook the scheme. Some UD M'42s were certainly sent to the Dutch East Indies before the Japanese invasion of the area, but they vanished without trace.

Most of the UD M'42s did find their way to Europe but in some very odd hands. Most were handed out to some of the numerous resistance and partisan groups that sprang up around and in the German- and Italian-occupied areas of the Mediterranean Sea. There they took part in some very odd actions, the most famous of which was when British agents kidnapped a German general on Crete. Other actions were just as dramatic but often took place so far from the public gaze that today these actions and the part the UD M'42 took in them are virtually forgotten.

This is perhaps a pity for many weapon authorities now regard the UD M'42 as one of the finest sub-machine gun types used in World War II. Being made on a commercial and not a military basis it was well machined and very strong. The action was smooth and the gun very accurate, and by all accounts it was a joy to handle. It could withstand all manner of ill-treatment (including immersion in mud and water) and still work.

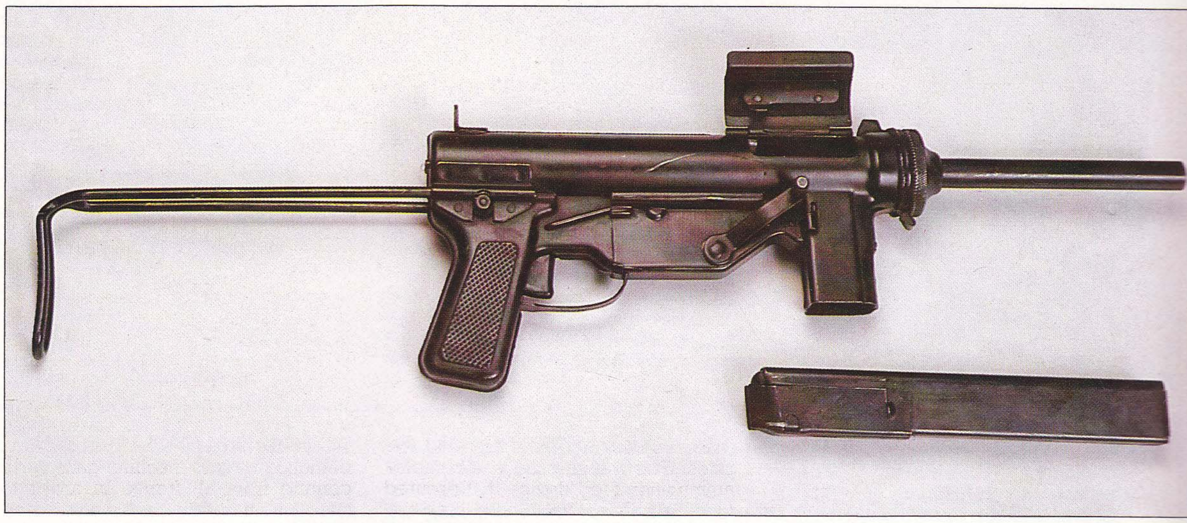
After all these years it now seems very unlikely that the full service record of the UD M'42 will ever be told, but at least the very existence of the weapon should be better known.

Specification:
Calibre: 9 mm
Length: 807 mm (31.75 in)
Length of barrel: 279 mm (11.00 in)
Weight loaded: 4.54 kg (10.00 lb)
Magazine: 20-round box
Rate of fire: 700 rpm
Muzzle velocity: 400 m (1,310 ft) per second

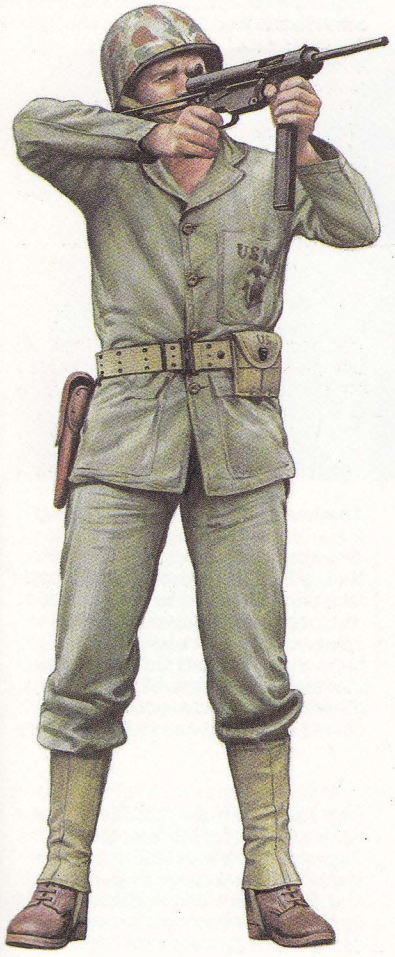
USA

M3 and M3A1

By the beginning of 1941, although the United States was not yet directly involved in World War II, the American military authorities had acknowledged that the sub-machine gun had a definite role to perform on the modern battlefield. They already had to hand numbers of Thompson guns and more were on their way, but the appearance of the German MP38 and the British Sten indicated the production methods that could be employed in future mass-produced designs. Using an imported Sten, the US Army Ordnance Board initiated a design study to produce an American Sten-type weapon. The study was handed over to a team of specialists who included the same George Hyde who had developed the Hyde M2 and to executives from General Motors, to whom the mass-production aspects were entrusted. In a very short time they had designed a weapon and development models were produced for trials.



The American M3 'Grease Gun' was the equivalent of the British Sten and the German MP40, for it was designed for mass production. It was a sound enough weapon but the American troops never really took to the type, preferring the Thompson.



Unpopular with its users in Europe, the 'Grease Gun' gained acceptance in the Pacific, where there was no alternative weapon.

The first of these models was handed over for trials just before Pearl Harbor brought the United States into World War II. As a result the project got a higher priority and it was not long before the design was issued with the designation **M3**. The M3 was just as unpleasant-looking as the Sten. Construction was all-metal with most parts simple steel stampings welded into place. Only the barrel, breech block and parts of the trigger mechanism required any machining. A telescopic wire butt was fitted and the design was simple to the point that there was no safety system fitted and the gun could fire fully-automatic only. The main gun body was tubular and below it hung a long 30-round box magazine. An awkwardly placed and flimsy cocking handle was placed just forward of the trigger on the right-hand side, and the cartridge ejection port was under a hinged cover. The barrel screwed into the tubular body. Sights were very rudimentary and there were no luxuries such as sling swivels.

The M3 was rushed into production and once issued to the troops it soon ran into acceptance troubles. The very appearance of the weapon soon provided it with the nickname of 'Grease Gun' and it was regarded with about as much affection. But once in action it soon showed itself to be effective, but the rush into production on lines that were more used to producing motor car and lorry components led to all manner of in-service problems. The cocking handles broke off, the wire stocks bent in use, some important parts of the mechanism broke because they were made of too soft a metal, and so on. Consequently the M3 received more than its fair share of in-service development and modification, but what was more important at the time, it rolled off the production lines in huge numbers for issue to the troops at the front.

The M3 never overcame the initial reception its appearance engendered. Whenever possible the troops in the front line opted for the Thompson M1 or used captured German MP38s and MP40s, but in the Pacific there was often no choice other than to use the M3 and when this happened the design often gained grudging acceptance. For some arms of the US forces the M3 became a virtual blanket issue. These arms included the drivers in the many transport units and tank crews. For both the M3 was easy to stow and easy to handle in close confines.

From the outset the M3 had been designed to have the capability of being rapidly converted to 9-mm calibre by simply changing the barrel, magazine and breech block. This facility was sometimes employed in Europe when the M3 was dropped to resistance forces. A silenced variant of the M3 was produced in small numbers.

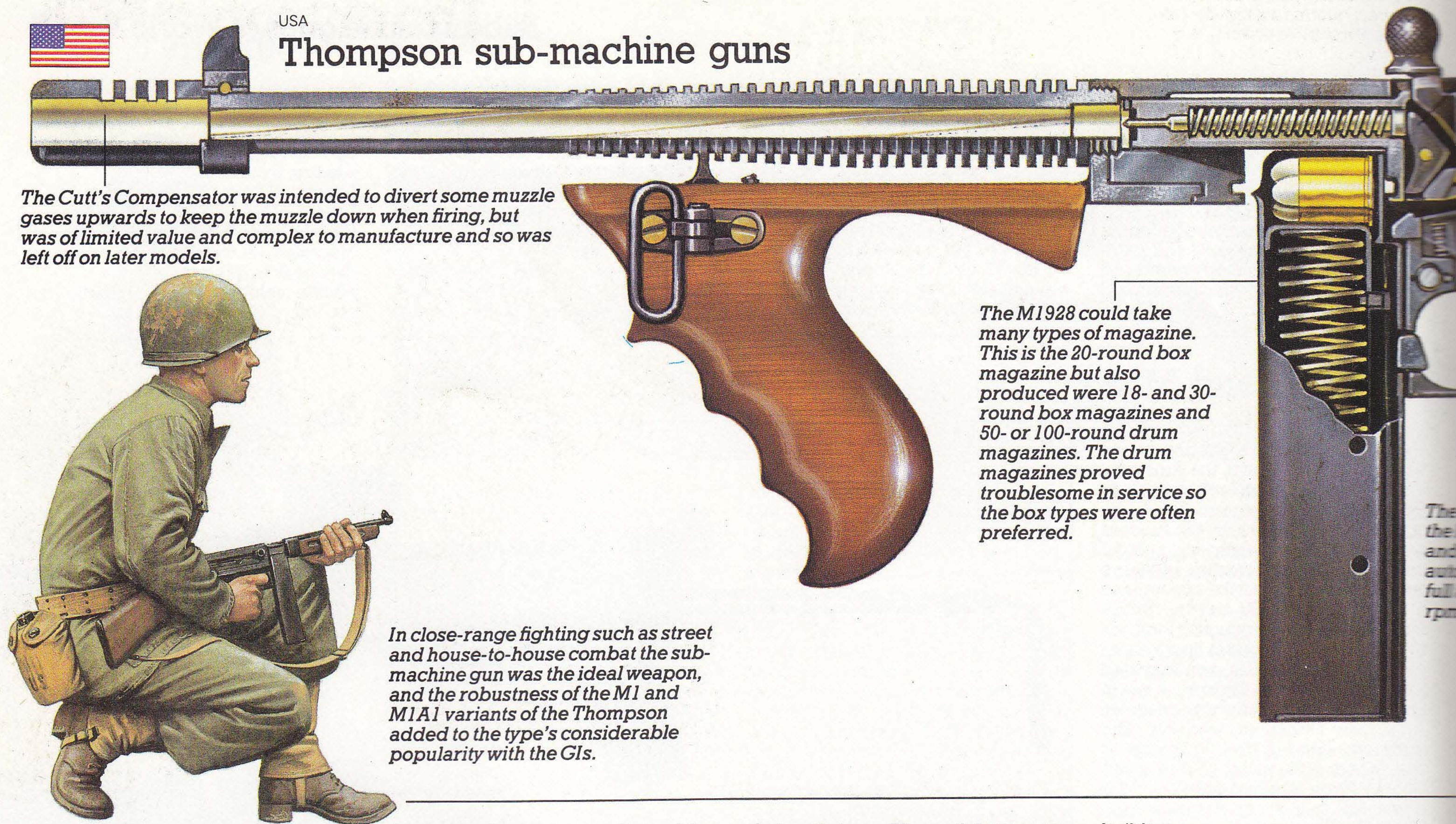
Simple as the M3 was to produce it was decided in 1944 to make it even simpler. The result of combat experience allied with production know-how resulted in the **M3A1**, which followed the same general lines as the M3 but with some quite substantial changes. For the soldier the most important item was that the ejection cover was enlarged to the point where the full breech block travel was exposed. This enabled the firer to place his finger into a recess in the block to pull the block to the rear for cocking, thus doing away with the awkward and flimsy cocking handle. A flash hider was added to the muzzle and some other minor changes were incorporated. The M3A1 was still in production when the war ended, by which time it had been decided to phase out the Thompson guns in favour of the M3 and M3A1.

Apart from the appearance problem, the M3 guns were not perfect weapons. They were rather prone to breakages, the ammunition feed was often far from perfect and the lack of a safety often gave rise to alarm. But it worked and it was available, and in war those two factors are more important than hankering after the something that might be better. Thus the M3 and M3A1 were used wherever the US Military went, and that was all over the world.

Specification: M3
Calibre: 0.45 in (11.43 mm) or 9 mm
Length, butt extended: 745 mm (29.33 in)
Length, butt retracted: 570 mm (22.44 in)
Weight loaded: 4.65 kg (10.25 lb)
Magazine: 30-round box
Rate of fire: 350-450 rpm
Muzzle velocity: 280 m (920 ft) per second

USA

Thompson sub-machine guns



The Cutt's Compensator was intended to divert some muzzle gases upwards to keep the muzzle down when firing, but was of limited value and complex to manufacture and so was left off on later models.

The M1928 could take many types of magazine. This is the 20-round box magazine but also produced were 18- and 30-round box magazines and 50- or 100-round drum magazines. The drum magazines proved troublesome in service so the box types were often preferred.

In close-range fighting such as street and house-to-house combat the sub-machine gun was the ideal weapon, and the robustness of the M1 and M1A1 variants of the Thompson added to the type's considerable popularity with the GIs.

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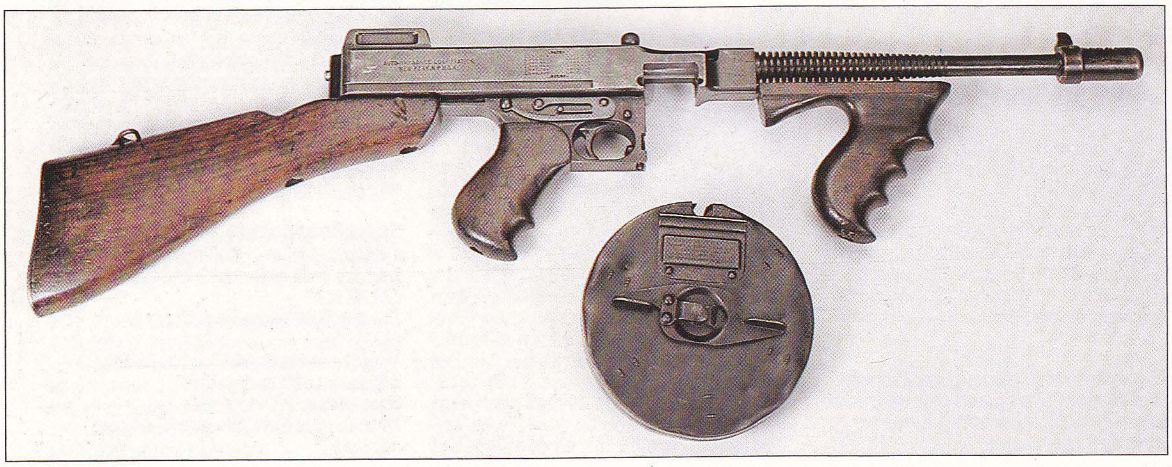
There can be very few who have not heard of or seen some pictures of the **Thompson** sub-machine gun at some time or another. Known universally as the 'Tommy Gun' the Thompson has even provided the sub-machine gun with a nickname, for to the lay public all sub-machine guns are Tommy Guns. Hollywood has done much to administer this fame but the story of the Thompson guns goes back to 1918.

In that year the US Army was embroiled in the trench warfare of the Western Front, a need becoming apparent for some form of 'trench broom' to sweep the trenches clear of an enemy. Since this 'sweeping' had to be carried out at short ranges a powerful cartridge was not necessary and a pistol cartridge was all that was deemed necessary. The German army had drawn the same conclusions and produced the MP18, but on the American side one General John Thompson initiated the development of an automatic weapon using the standard 0.45-in pistol cartridge. The first examples used a belt feed but this was later changed to a two-hand weapon of the type soon known as a sub-machine gun, and with a box magazine.

By the time the first examples were produced World War I was over and all development for the next two decades was carried out on a commercial basis. The Thompson Gun, as it was soon labelled, went through a long chain of different models. Military sales were few, other than small batches to the US Army and US Navy, but it was with the coming of Prohibition in the USA that the weapon gained its public notoriety. The gang warfare that mushroomed throughout the American underworld soon found the Thompson a most useful weapon, and when Hollywood started to make gangster films the gun became famous overnight. Gradually police forces started to purchase Thompson guns, and the type became more generally accepted. Even then, military sales were few until 1928 when the US forces started to purchase some large batches.

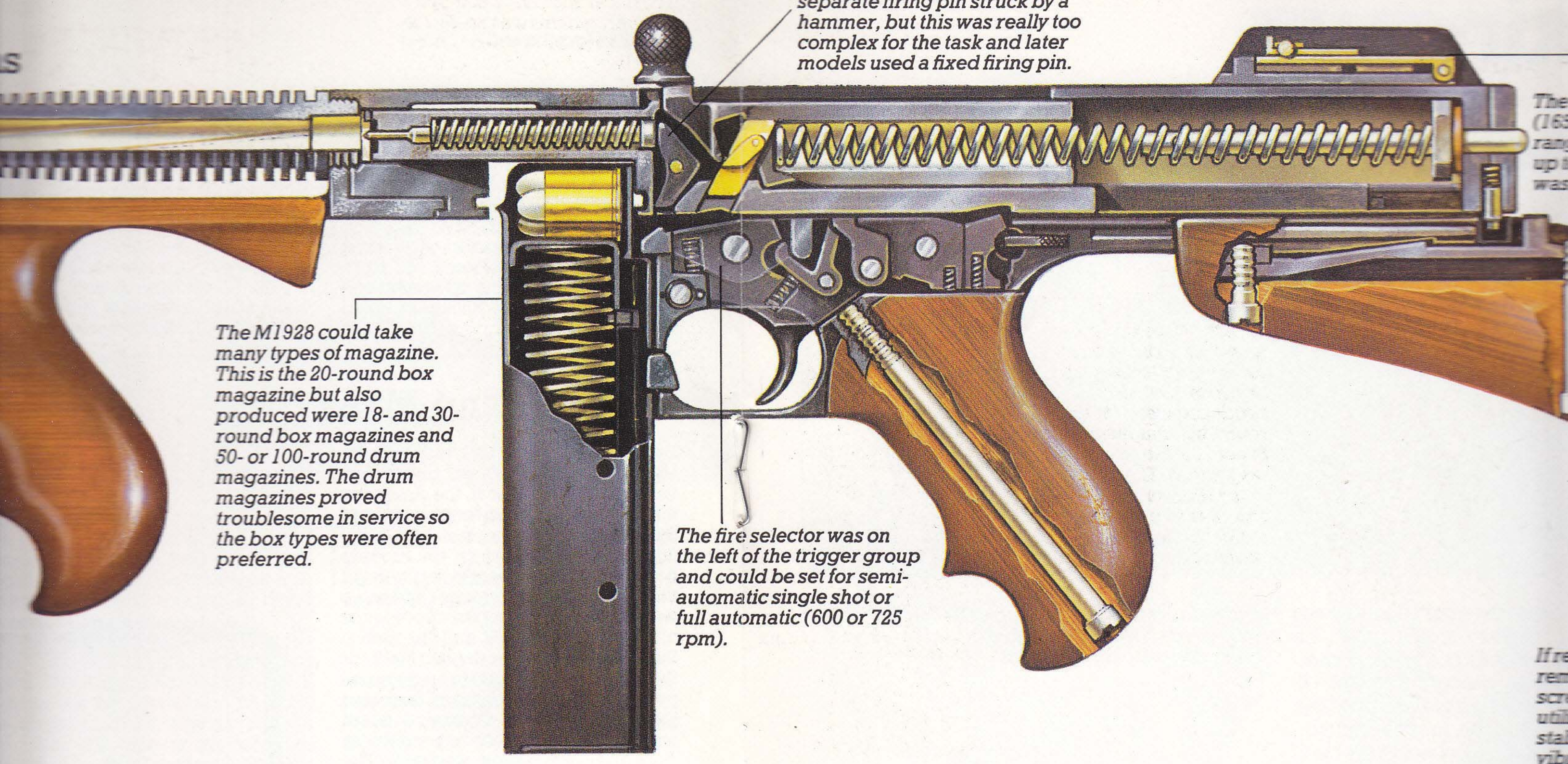
The **Thompson M1928** was a complex piece of gunsmithing with a complicated blow-back mechanism and a choice of a large 50-round drum magazine and 20- or 30-round vertical box magazines. Just maintaining the M1928 was quite a task. There were many variations between different models, which did nothing to endear the type to the military supply systems, and it was not until 1940 that sales really started to build up.

In 1940 several European nations were clamouring for Thompson guns. The unexpected employment by the Germans of sub-machine guns on a large scale produced requests for similar weapons from all the European combatants, and the Thompson was



Above: In 1939 and 1940 the UK had to purchase large numbers of Thompson sub-machine guns. This soldier is holding an M1928 complete with the 50-round drum magazine, a device that soon proved to be too complex for service use and too noisy due to the 0.45 calibre rounds moving about inside. Consequently these were issued to either the Home Guard or second-line units.

Left: The Thompson M1928 was the 'classic' model of the famous Thompson sub-machine gun, the weapon that was used by gangsters and American soldiers alike. For all its notoriety it was not a great commercial success until 1940.



The original Thompson guns used a separate firing pin struck by a hammer, but this was really too complex for the task and later models used a fixed firing pin.

The M1928 could take many types of magazine. This is the 20-round box magazine but also produced were 18- and 30-round box magazines and 50- or 100-round drum magazines. The drum magazines proved troublesome in service so the box types were often preferred.

The fire selector was on the left of the trigger group and could be set for semi-automatic single shot or full automatic (600 or 725 rpm).

oice of a large 50-round drum maga-e and 20- or 30-round vertical box gazines. Just maintaining the M1928 s quite a task. There were many riations between different models, ich did nothing to endear the type to e military supply systems, and it was t until 1940 that sales really started to build up.

In 1940 several European nations were clamouring for Thompson guns. The unexpected employment by the Germans of sub-machine guns on a large scale produced requests for similar weapons from all the European combatants, and the Thompson was the only example on offer. Large-scale production of the Thompson commenced for France, the UK and Yugoslavia, but these orders were overtaken by events as the Thompson was an awkward weapon to mass-produce because of the large number of complex machining processes involved.

In the event the French and other orders were diverted to the United Kingdom, where the M1928 was used until the Sten became available, and even then many were issed for Commando raids and the later jungle fighting in Burma. When the USA entered the war the US Army also de-

Above: In 1939 and 1940 the UK had to purchase large numbers of Thompson sub-machine guns. This soldier is holding an M1928 complete with the 50-round drum magazine, a device that soon proved to be too complex for service use and too noisy due to the 0.45 calibre rounds moving about inside. Consequently these were issued to either the Home Guard or second-line units.

Above: A New Zealander armed with an M1928 during the Cassino campaign. This particular model is the M1928A1, a military version fitted with a horizontal foregrip in place of the original forward pistol grip. The M1928A1 also had some of the commercial refinements removed as well, and the 20- or 30-round box magazine was used instead of the larger drum magazine.

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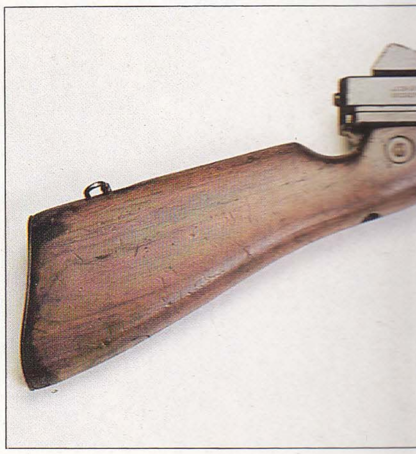
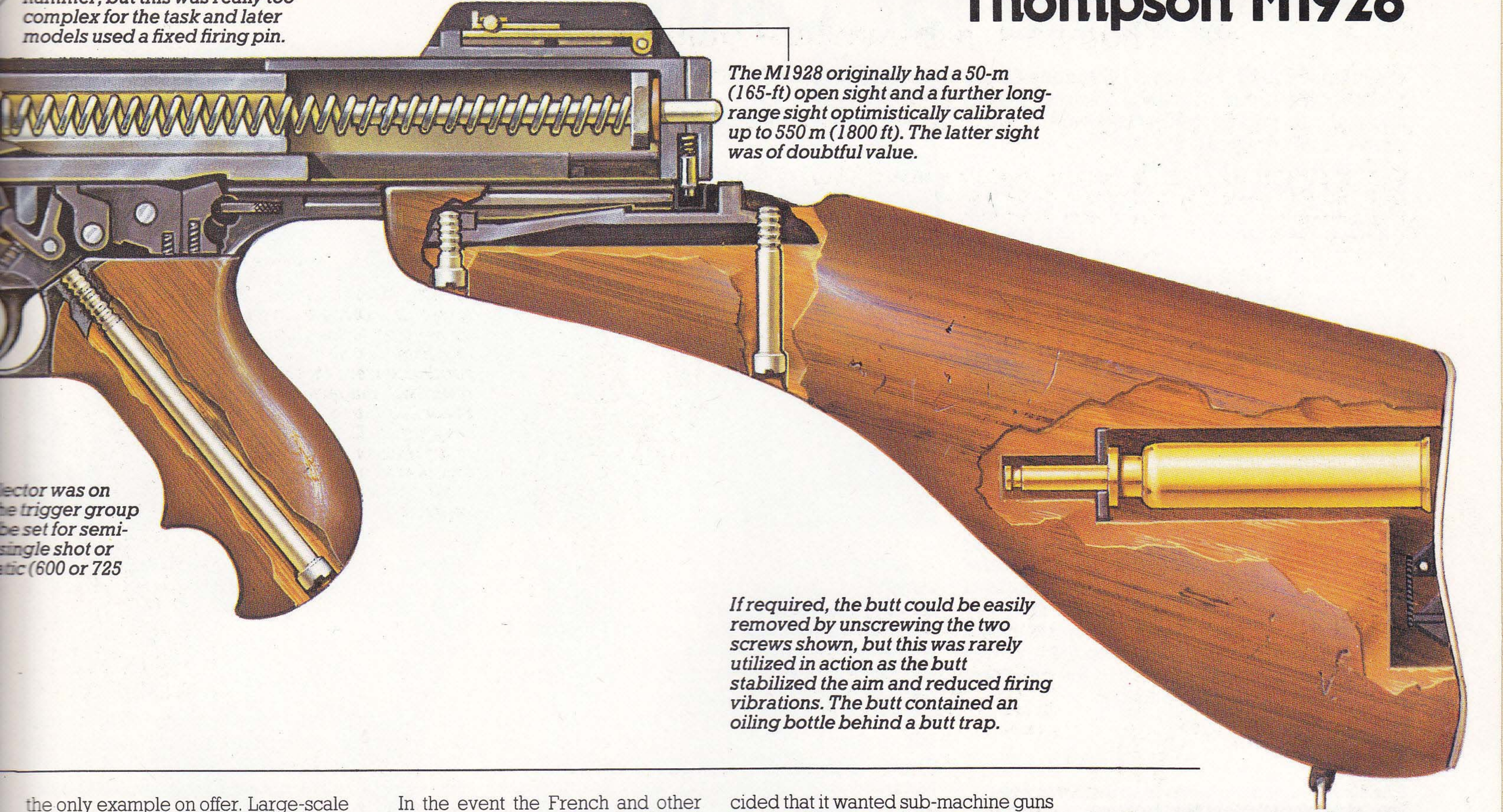


Right: The M1A1 was essentially the same weapon as the M1 but had a fixed firing pin and hammer, making the type a virtual blow-back design. It was the last production version of the famous Thompson family of weapons and retained the overall appearance and aura of the original.

Thompson M1928



The original Thompson guns used a separate firing pin struck by a hammer, but this was really too complex for the task and later models used a fixed firing pin.

The M1928 originally had a 50-m (165-ft) open sight and a further long-range sight optimistically calibrated up to 550 m (1800 ft). The latter sight was of doubtful value.

lector was on e trigger group be set for semi- single shot or tic (600 or 725

If required, the butt could be easily removed by unscrewing the two screws shown, but this was rarely utilized in action as the butt stabilized the aim and reduced firing vibrations. The butt contained an oiling bottle behind a butt trap.

the only example on offer. Large-scale production of the Thompson commenced for France, the UK and Yugoslavia, but these orders were overtaken by events as the Thompson was an awkward weapon to mass-produce because of the large number of complex machining processes involved.

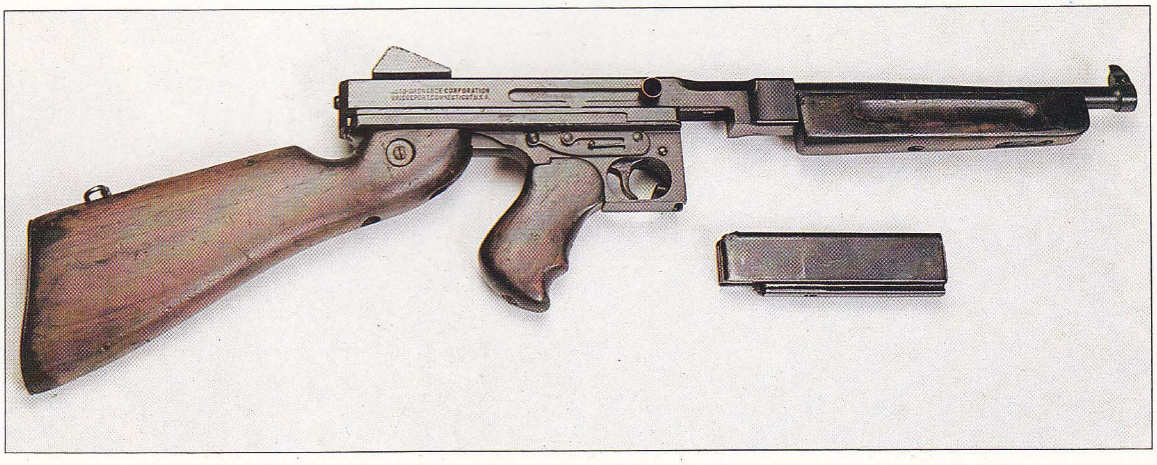
In the event the French and other orders were diverted to the United Kingdom, where the M1928 was used until the Sten became available, and even then many were issed for Commando raids and the later jungle fighting in Burma. When the USA entered the war the US Army also decided that it wanted sub-machine guns but the Thompson had to be redesigned to meet US Army requirements for mass production. After redesign the Thompson became a far simpler weapon with a straightforward blowback action with no frills and the old large, noisy and awkward drum magazine so beloved by Hollywood was replaced by the simple vertical box. The new design became the **M1** and a later version with some extra simplifications added became the **M1A1.**

The M1 still used a wooden stock, pistol grip and foregrip (this was later replaced by a straight foregrip), but the body was machined as were many other parts. In service the M1 proved to be a well-liked weapon that was usually preferred to the unlovely M3. Again, exactly how much of this preference was due to the Hollywood image is now almost impossible to determine, for compared with many of its contemporaries the M1 was heavy and not so easy to strip and maintain. This did not deter the M1928 and the M1 from being widely copied in many backyard workshops in the Far East where the Thompson was regarded with great favour.

Over the years the Thompson underwent many changes and modifications. With time most of the more complex extras were removed. Out went the complex breech-locking mechanism, out went the Cutt's Compensator on the muzzle that was supposed to restrict the barrel 'climb' when firing, and out went the bulky drum magazine. The end result in the M1 form was a good sound weapon and one that is still as famous as it was in the days when the Tommy Gun was the symbol of the IRA and the Hollywood gangster era.

Specification:
Thompson M1
Calibre: 0.45 in (11.43 mm)
Length: 813 mm (32.00 in)
Length of barrel: 267 mm (10.50 in)
Weight loaded: 4.74 kg (10.45 lb)
Magazine: 20- or 30-round box
Rate of fire: 700 rpm
Muzzle velocity: 280 m (920 ft) per second

Above: A New Zealander armed with an M1928 during the Cassino campaign. This particular model is the M1928A1, a military version fitted with a horizontal foregrip in place of the original forward pistol grip. The M1928A1 also had some of the commercial refinements removed as well, and the 20- or 30-round box magazine was used instead of the larger drum magazine.



Right: The M1A1 was essentially the same weapon as the M1 but had a fixed firing pin and hammer, making the type a virtual blow-back design. It was the last production version of the famous Thompson family of weapons and retained the overall appearance and aura of the original.

The Battle for Okinawa

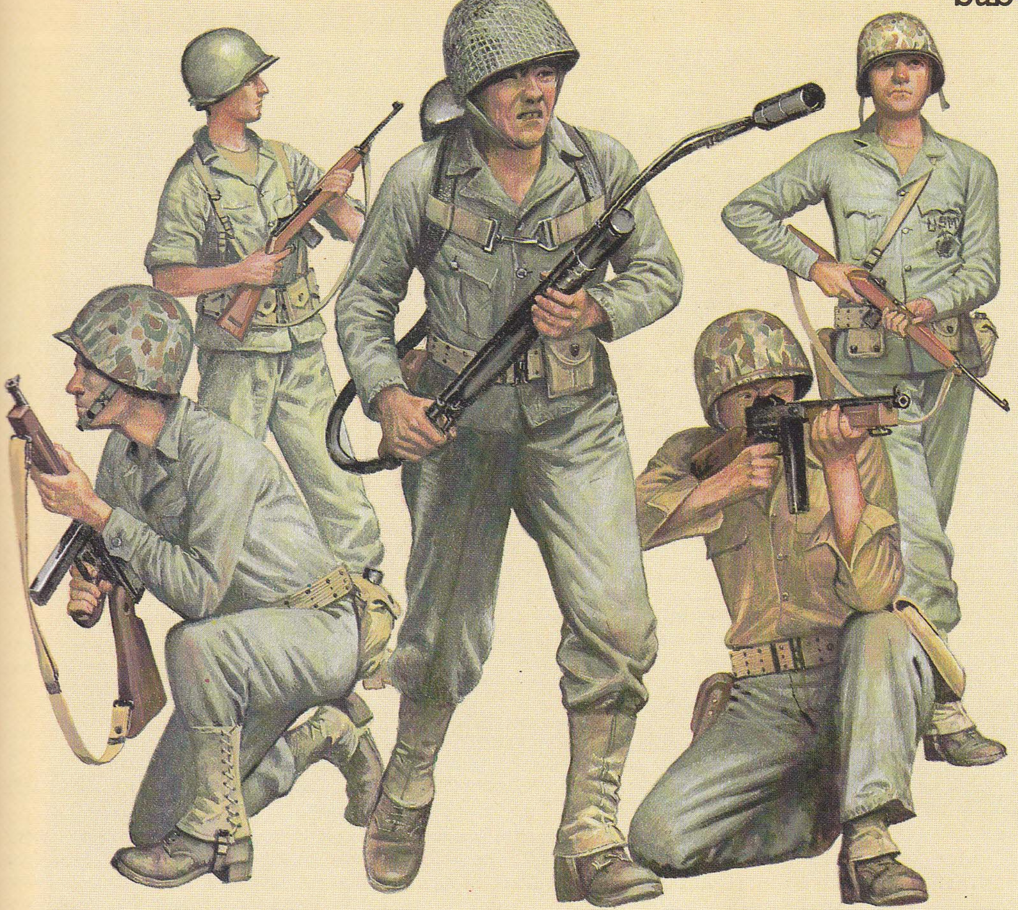
By the time the US Navy and US Marine Corps reached the group of islands centred around Okinawa they were well versed in the art of island-clearing against the Japanese and knew what to expect. They already knew that the Japanese forces on every island would defend every inch to their last breath, but what was awaiting them on Okinawa took them by surprise, for Okinawa was deemed to be part of the Japanese home island chain.

The approaches to Okinawa were cleared in the usual amphibious landing after initial bombardment manner in the months to 1 April 1945. Outlying islands were gradually reduced until the main assault landing was made on the Hagushi Bay beaches on Okinawa itself. The first surprise came when no opposition was met right on the beaches. The US Marines landed virtually unopposed, but as they moved inland the fighting commenced. Every foot of the way, once inland, was defended. The Japanese had constructed log and bamboo bunkers, cunningly placed slit trenches and converted natural caves and blasted new ones into the walls of every gully and valley on the island. In every defended point there were Japanese troops willing to die rather than surrender and this meant that the infantry tactics of the attackers had to adjust to suit the situation.

Almost as soon as the defence situation was assessed American military might could be used to blast the defenders out of their positions. Naval gunfire was brought to bear; US Navy and US Marine strike aircraft from a fleet of carriers were called upon to drop napalm and HE onto carefully indicated positions but it was always the man on the ground who had subsequently to move in and make sure that every last defender was eliminated. For this purpose set procedures and drills were formed and pressed directly into use. These drills became even more important once the beaches were left behind and the hilly terrain of the interior was encountered. Naval gunfire could not always reach the specified targets and in some hilly regions aircraft could do little, so small teams of infantry had to assume the clearing task.

Tanks and men of the 1st Marine Division fighting dug-in Japanese defenders towards the end of a bitter three-month campaign.

Thompson- and flamethrower-armed men from the 1st Marine Division landing from their LVT 4 Amtrac on Okinawa.



Faced with an enemy who had dug into the hills of Okinawa to the extent that conventional naval and air bombardment was inadequate, and for whom death was preferable to surrender, the US Marines had to develop specialized bunker-clearing teams. Each consisted of a flamethrower to force entry and two riflemen whose grenades preceded the entry of two sub-machine gunners. The team had to ensure that every defender was killed, as even the mortally wounded fought on.

The teams usually operated in small four-man groups in support of flamethrowers. When possible these flamethrowers were mounted on converted M4 Sherman tanks but the usual type was a back-pack model. The infantry approached the defended location using supporting fire from a machine-gun or rifle teams. Sometimes a bazooka was added to the support to blast a way through bunkers or obstacles, but once within range the flamethrower was used to burn the position or entrances. Subsequent 'burns' were made as the team approached. The final entry was preceded by grenades and two men carrying sub-machine guns to spray the interior, with a final flamethrower 'burn' if necessary. Every defender had to be killed as even the wounded attempted to fight on.

The *kamikaze* horror

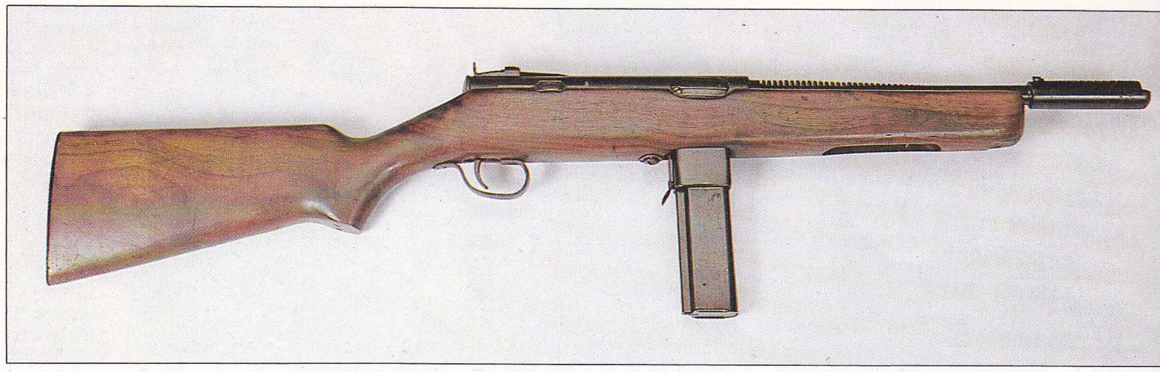
The Okinawa battle lasted until 21 June 1945 when the last outposts were eliminated. By that time the battle had been joined by a new factor in warfare, the *kamikaze* pilot. The first large-scale use of this desperate measure was made against the American supply vessels off Okinawa and continued throughout the battle, sinking 36 ships and damaging a further 368. But even this horror could not overshadow the grim repetitive slog through the inland terrain of Okinawa. Constant close combat meant that to progress as little as 100 m took over a week of continuous fighting, most of it infantry slogging with high casualties. The whole campaign cost the Americans 12,520 dead, 36,631 wounded and a further 16,211 'other' casualties. It cost the Japanese defenders well over 100,000 dead alone and the full extent of their casualties will now never be known.

Apart from the 'butcher's bill' the Okinawa campaign cost the Americans a great deal in material and effort. The amount of shipping involved and the high stockpiles of ammunition and equipment that had to be expended on what was only the first of the Japanese 'mainland' islands surprised even them, although their resources would have enabled them to replace virtually everything in a short time. What they did not relish was the full assault on the mainland and here the Okinawa campaign had its greatest impact on world history. In the short term Okinawa provided the US Air Force with bomber bases close to Japan itself but the Okinawa casualties showed the Americans that the war had to be ended quickly with every resource to hand. Thus they dropped the first combat atomic bomb on Hiroshima and followed it with a second bomb on Nagasaki. Hundreds of thousands died but the expected millions of casualties that an assault on the Japanese mainland would have entailed were thus avoided. In this way the Battle of Okinawa casts its shadow still.

Such was the ferocity of the fighting on Okinawa that only one in 12 of the defending troops was captured alive. Many of the civilian inhabitants had died in the battle.

USA

Reising Model 50 and Model 55



The **Reising Model 50** and the later **Model 55** are two more examples of how things can go wrong when the basic blow-back action used on the sub-machine gun is ignored and replaced with something that seems to offer a better action. On the Reising Model 50, which was first produced in 1940, the basic action was altered so that instead of the breech block moving forward to the chamber when the trigger was pulled, the action operated when the bolt was forward with a round in the chamber. This action can work quite well but it needs a system of levers to operate the firing pin in the breech block and these levers have to disconnect once the breech block moves. This all adds complexity and cost and adds something to the system which can break.

Thus it was with the Reising Model 50. The design was the result of a commercial venture and was thus not so influenced by military considerations as would have been the case a few years later, but the Model 50 was a well-made design with an unusual system of cocking the weapon by means of a small catch sliding in a slot under the fore-stock. This left the top of the gun body free of many of the usual hazards such as the cocking slot that usually provides an ingress for dirt to clog the system. But on the Model 50 all that happened was that the dirt got into the slot underneath and was difficult to clean out, thus providing one source of potential bother. From the outside the Model 50 looked a fairly simple weapon but the internal arrangements were complex to the point where there was too much to go wrong, hence there were more stoppages and general unreliability.

When the Reising Model 50 was first offered to the US forces the US Marine Corps was some way down the list of priorities, a position it was later dramatically to reverse, so in the absence of any other source of sub-machine guns it obtained numbers of the Model 50. Once the USMC had the Model 50 it soon found the weapon wanting and obtained other weapon types. Some Model 50s were obtained by a British Purchasing Commission but few were involved and some others went to Canada. Yet more were sent to the Soviet Union and by 1945 the Model 50 was still in production and over 100,000 had been made, a modest enough total but well worthwhile as far as the manufacturers were concerned.

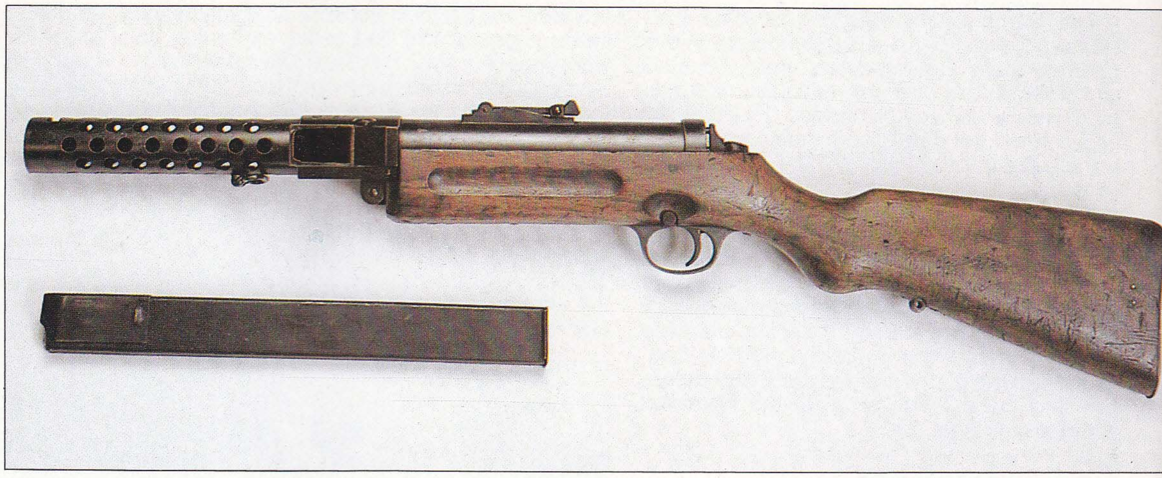
Some of this total was made up by the Model 55 which was the same as the Model 50 other than that the all-wood stock of the Model 50 was replaced by a folding wire butt for use by airborne and other such units. The Model 55 was no more successful than the Model 50.

The Reising Model 50 was one of the least successful of all American sub-machine guns to see service, for it employed a complex mechanism that allowed ingress of dirt and other debris to jam the weapon to an unacceptable extent.

Specification:
Model 50
Calibre: 0.45 in (11.43 mm)
Length: 857 mm (33.75 in)
Length of barrel: 279 mm (11.00 in)
Weight loaded: 3.7 kg (8.16 lb)
Magazine: 12- or 20-round box
Rate of fire, cyclic: 550 rpm
Muzzle velocity: 280 m (920 ft) per second

GERMANY

MP18 and MP28



Although it was preceded in the time scale by the Italian Villar Perosa, the **MP18** can be considered as the father of the modern sub-machine gun. In both the general concept, operating principle and all-round appearance the MP18 embodied all the features that have become commonplace, and even today many sub-machine gun designs are no more than gradual improvement results of the basic MP18.

The design of the MP18 began on a low priority in 1916 to provide front-line troops with some form of rapid-fire low-range weapon. The designer was the man whose name later came to be synonymous with the sub-machine gun, namely Hugo Schmeisser. It was not until 1918 that large numbers of the new weapon, known to the Germans as a *Maschinen-Pistole* (hence MP) or machine pistol were issued to the troops on the Western Front to be used in the gigantic offensives that were intended to win the war for the Germans. The offensives were unsuccessful, and the MP18 had little more than local impact, the lessons to be learned from the design being largely ignored outside Germany and the few troops who had come into contact with the weapons.

The MP18 was a simple blow-back weapon firing the classic 9-mm Parabellum round that was to become the prototype for nearly all weapons to come. Considering later designs the MP18 was very well made, with a solid wooden stock and a 32-round 'snail' magazine (intended originally for the famous Luger pistol) mounted in a housing on the left of the gun body. The barrel was covered by a prominent perforated jacket to aid barrel cooling after firing, and the weapon fired on full automatic only. In its intended role of trench fighting it was a great success, but too many front-line commanders attempted to use it as a form of light machine-gun and were thus disappointed with the MP18's performance. Consequently the MP18 had a mixed reception other than with the storm-troopers in the front assault waves, who found it invaluable at close quarters.

When Germany was disarmed after 1919 the MP18 was passed to the German police in an attempt to keep the concept alive. Numbers were also handed over to the French army who used them (but so little) that they were still 'on the stocks' in 1939. In German police service they were modified during the 1920s to replace the Luger 'snail' magazine with a simple inline box magazine that again became the virtual prototype of what was to follow. In 1928 the MP18 was placed back into limited production in Germany, this time as the **MP28**, with new sights, a single-shot fire feature, some small internal changes on the breech block and all manner of extras such as the mounting for a bayonet. The MP28 had the new box magazine as standard and the type was produced in Belgium, Spain and elsewhere for export all over the world, with China being one of the largest markets. Others went to South America and one batch, produced in the 7.65-mm calibre, was sold to Portugal.

By 1939 there were still appreciable numbers of MP18s and MP28s around, and the design went to war in Europe once again. By 1945 the weapons were still being encountered not only in the hands of the Germans but also in the hands of resistance forces and the many partisan forces.

Perhaps the greatest importance of the MP18 and the MP28 was not in their use as weapons, although they were successful enough in that, but in their example for other designers to follow. With the MP18 the sub-machine gun design was virtually 'frozen' and the basic concept remains unchanged to this day.

The German MP28 was a revised model of the original MP18. It retained the general outline of the MP18 but was able to fire either single shot or full automatic.

Specification:
MP18
Calibre: 9 mm
Length: 815 mm (32.09 in)
Length of barrel: 200 mm (7.87 in)
Weight loaded: 5.245 kg (11.56 lb)
Magazine: 32-round 'snail', later 20- or 32-round box
Rate of fire, cyclic: 350-450 rpm
Muzzle velocity: 365 m (1,200 ft) per second

GERMANY

MP34 and MP35

At first sight the **MP34** and **MP35** appeared to be direct copies of the MP18 and MP28, but there were in reality many differences. Easily missed at first glance was that on the MP34 and MP35 the magazine protrudes from the right hand side of the gun body instead of on the left as with the MP18 and MP28. Another detail difference was the trigger mechanism, which on the MP34 and MP35 relied on a double-pressure system for control of rate of fire. A simple light pressure on the trigger produced single shots, while a full pressure on the trigger provided automatic fire.

The MP34 was designed by the Bergmann brothers, who almost undoubtedly used the MP18 as a basis on which to improve. As they had few facilities in Germany the brothers produced their first example in Denmark and only later was production switched to Germany. The first models were the MP34 but later improvements led to the MP35, which was produced in considerably greater numbers. At first production was slow, with sales being made to such nations as Ethiopia and Sweden, but with the Spanish Civil War sales really picked up to boost the company to a major position in the sub-machine gun market. The MP35 was produced in both long- and short-barrelled versions, and niceties such as bayonet attachments and even light bipods were introduced. One very noticeable point on the MP35 was the use of a rear-mounted bolt for cocking the weapon instead of the usual side-mounted cocking lever. This meant that the interior of the weapon body along which the breech had to travel was kept clear of the dust and dirt that usually finds its way into open side-lever actions and the MP34 and MP35 were certainly reliable weapons, even if they were a little heavier than some of their rivals.

It was this reliability that brought the MP35 to the attention of what was to be the biggest customer for the weapon, namely the Waffen SS which was looking for its own weapons procurement separate from that of the German army, and after late 1940 all MP35 production went to the Waffen SS, continuing until the war ended in 1945. But MP34s and MP35s still cropped up elsewhere, and many can still be found in use with South American police forces, while small numbers can still be encountered in the Far East. The reason for this longevity is quite simply that the MP34 and MP35 were very well manufactured, with nearly all parts machined from the solid metal. But in most countries today the MP35 is a much prized collector's piece as the bulk of the production carried the stamp of the Waffen SS.

Specification:

MP35

Calibre: 9 mm (plus many others in export models)

Length (standard model): 840 mm (33.07 in)

Length of barrel: 200 mm (7.87 in)

Weight loaded: 4.73 kg (10.43 lb)

Magazine: 24- or 32-round box

Rate of fire, cyclic: 650 rpm

Muzzle velocity: 365 m (1,200 ft) per second

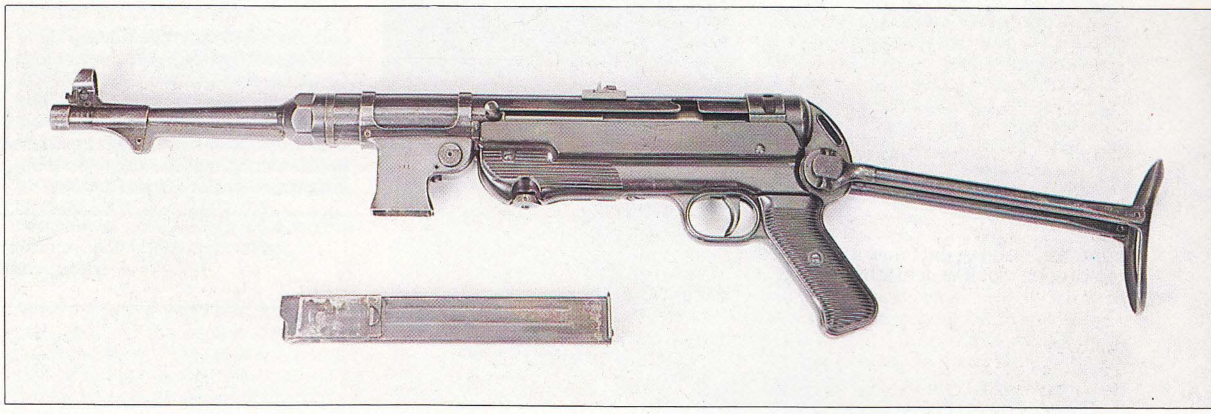
GERMANY

MP38, MP38/40 and MP40

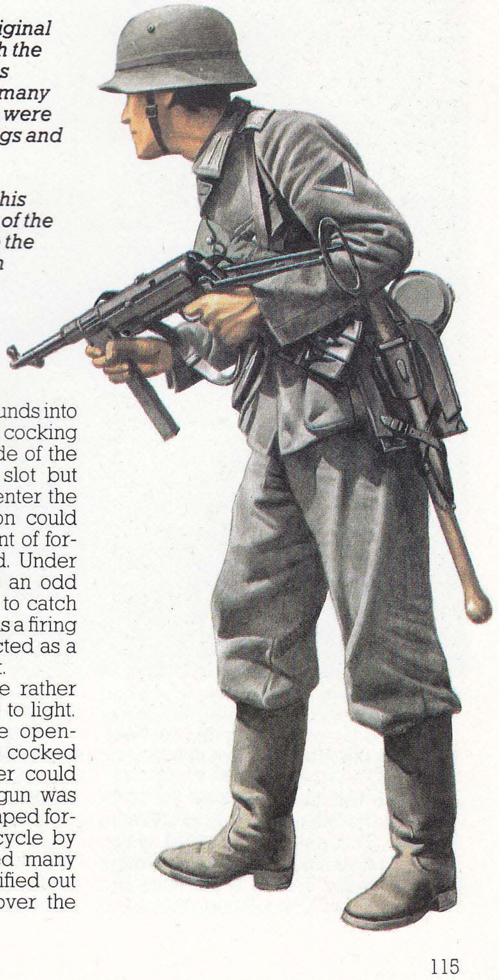
When the **MP38** was first produced in 1938 it revolutionized weapon design not by any particular feature of the design but by the method of manufacture employed. Gone was the accurate machine tooling of yesteryear, along with the finely-produced wooden fittings, and the standard of finish upon which gunsmiths so prided themselves. With the introduction of the MP38 came rough and simple metal stampings, die-cast parts, plastic instead of wood, and a finish that lacked any finesse or even plating of any kind. The MP38 looked what it was, a weapon mass-produced to meet a precise military need, namely a simple and cheap weapon that would work when called upon to fire, and nothing more. On the MP38 there was no wooden butt, just a bare folding heavy wire framework that folded under the body for use in close confines such as the back of a vehicle. The body was produced from simple sheet metal stampings that could be churned out in any metal workshop anywhere and the breech block was provided with only a minimum of machining. Most of the outer surfaces were left in their bare-metal state and at the best they were painted. Despite all these apparently cheap and cost-cutting measures the MP38 had an immediate impact out of all proportion to its design attributes, for in the years after 1938 more and more weapons adopted similar mass-production techniques first introduced on the MP38.

The MP38 was quite orthodox so far as operation went. It had a conventionally-functioning blow-back bolt and the vertical magazine under the body fed 9-mm Parabellum rounds into a conventional feed system. A cocking handle along the left-hand side of the body operated in an open slot but although dust and dirt could enter the internal workings the weapon could absorb an appreciable amount of foreign bodies before it jammed. Under the barrel muzzle there was an odd projection that was designed to catch on the edge of vehicles to act as a firing rest but the same item also acted as a muzzle cover to keep out dirt.

Once in action in 1939 one rather nasty habit of the MP38 came to light. The gun operated from the open-breech position (the bolt was cocked to the rear before the trigger could release it to fire) but if the gun was jarred or knocked the bolt jumped forward and started the firing cycle by itself. This nasty fault caused many casualties before it was modified out by the machining of a slot over the



Above: This MP38 was the original production version. Although the design was intended for mass production the receiver and many parts were machined – these were later replaced by the pressings and welds of the MP40.



Right: The MP40, as used by this corporal during the invasion of the USSR, was almost identical to the MP38 except that it was much simpler to manufacture.

Two German army Panzergrenadiers armed with MP40s occupying a shell hole on the outskirts of Stalingrad. As will be understood, the MP40 was at a slight disadvantage in such positions, for the long downward-pointing magazine was no assistance when firing over the lip of such a shell hole.

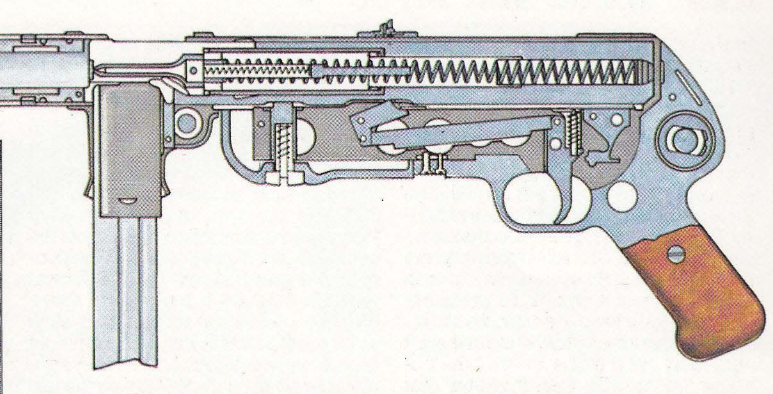
MP38, MP38/40 and MP40 (continued)

breech block 'home' position, through which a pin could engage and lock after being pushed through a hole on the other side of the body; it could be released when required for firing. With this modification fitted the MP38 became the **MP38/40**.

During 1940 the simple manufacture of the MP38 was taken one stage further with the introduction of even more metal stampings and even simpler manufacturing methods. The new version was called the **MP40**: to the soldier in the field it was little different from the MP38/40, but for the German economy it meant that the MP40 could be easily manufactured anywhere with sub-assemblies being produced in simple workshops and assembled only at central workshops. It was churned out in tens of thousands and in the field it proved a most popular and handy weapon with Allied troops using any examples they could find or capture. The MP38/40 was often used by resistance forces and partisans as well.

The only major change to the MP40 after 1940 was the introduction of a twin-magazine feature with the **MP40/2**. This was not a success and was little used. But the MP40 is still used today in odd corners of the world, especially by guerrilla forces.

One odd word about this weapon: It is often known as the 'Schmeisser'. Exactly where this name came from is not known, but it is incorrect; Hugo Schmeisser had nothing to do with the design, which originated with the Erma concern.



Above: This cutaway drawing shows the simple 'in-line' layout of the MP38. The compact design employs the blow-back principle, but the main return spring is housed in a telescopic tube that kept out dirt and foreign objects to ensure reliability. Note also the simple trigger mechanism.

Left: An MP40 in action during the Stalingrad fighting. Although many German propaganda photographs tend to give the impression that the MP38 and MP40 were in widespread use, their issue was largely restricted to front-line divisions only and the Panzergrenadiers in particular.

Specification:
MP40
Calibre: 9 mm
Length, stock extended: 833 mm (32.80 in)
Length, stock folded: 630 mm (24.80 in)
Length of barrel: 251 mm (9.88 in)
Weight loaded: 4.7 kg (10.36 lb)
Magazine: 32-round box
Rate of fire, cyclic: 500 rpm
Muzzle velocity: 365 m (1,200 ft) per second

USSR

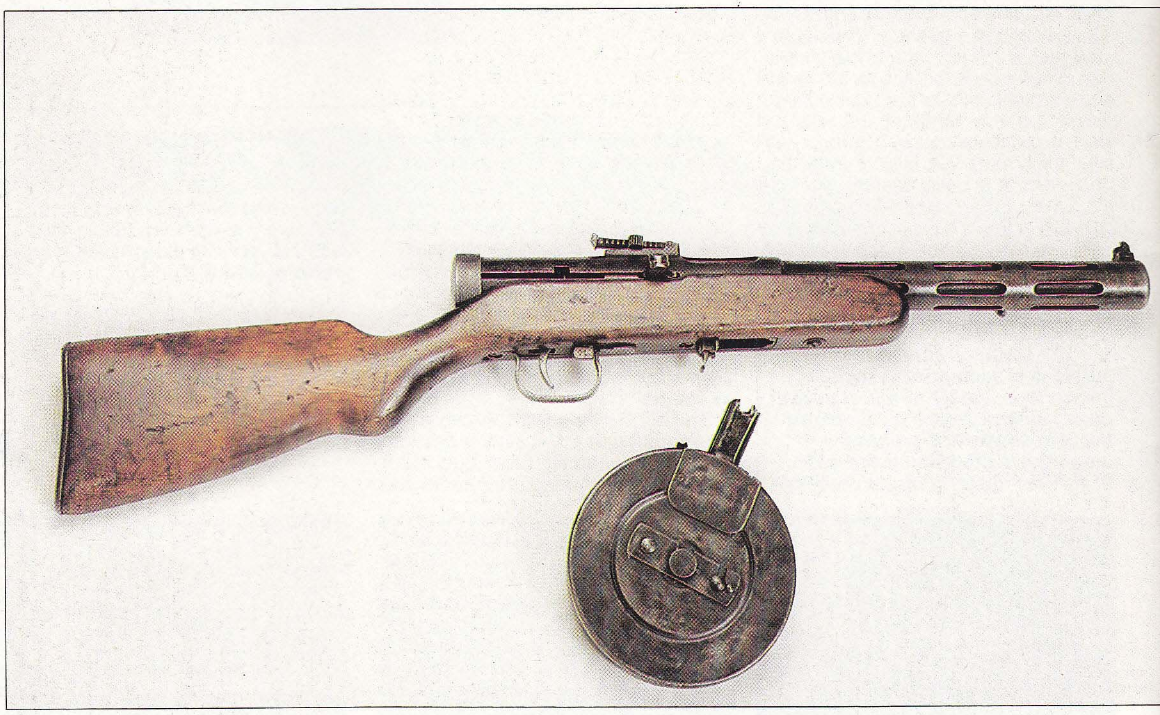
PPD-1934/38

The Soviet Union had enough troubles during the 1920s and 1930s without worrying too much about weapon design, but when things settled down enough for the re-equipment of the Red Army to be contemplated, sub-machine gun design was not very high on the list of priorities. Rather than make any innovations in sub-machine gun design the first Soviet sub-machine gun was a combination of existing designs. This was the **PPD-1934/38.**

When it was first produced in 1934, the weapon was a combination of features from the Finnish Suomi m/1931 and the German MP18 and MP28. It remained in production until 1940 by which time some modifications had been introduced to justify the use of the full designation of PPD-1934/38. There was nothing very remarkable about the PPD-1934/38. The mechanisms was almost the same as that used on the German sub-machine gun originals and, after a short attempt to produce a Soviet-designed component, the magazine was a direct take-off from the Suomi magazine. This was the Suomi 71-round drum magazine that was to become the virtual norm for later Soviet sub-machine guns, but there was also a curved 25-round box magazine issued on occasion. This box magazine had to be curved as the cartridge used for all the Soviet sub-machine guns was the 7.62-mm Tokarev (Type P) cartridge which had a bottle-necked shape and would not therefore lie completely flat for feeding from the magazine lips into the gun body.

There was one variant of the PPD-1934/38 that was placed in production in 1940. This was the **PPD-1940**, which was a general all-round improvement on the earlier design. It did have one very noticeable recognition feature in that the drum magazine fitted up into the gun through a large slot in the stock. Very few other sub-machine gun designs used this magazine fixing system.

When the Germans and their allies invaded the USSR in 1941 the PPD-1934/38 and PPD-1940 were in relatively short supply among Red Army units and they had little impact on the course of events. Any the Germans captured they issued to their own second-line units, but the numbers involved were never very large. By the end of 1941 even the PPD-1940 had passed out of production for the simple reason that the Germans had overrun the arsenals concerned and there was no time to set up the extensive machine-shops and production lines elsewhere. The Red Army had to resort to newer and more easily produced sub-machine gun models.



The Soviet PPD-1934 introduced one feature later used on all Soviet sub-machine gun designs: the chromed barrel to reduce wear and ease cleaning.

Specification:
PPD-1934/38
Calibre: 7.62 mm
Length: 780 mm (30.71 in)
Length of barrel: 269 mm (10.60 in)
Weight loaded: 5.69 kg (12.54 lb)
Magazine: 71-round drum or 25-round box
Rate of fire, cyclic: 800 rpm
Muzzle velocity: 488 m (1,600 ft) per second

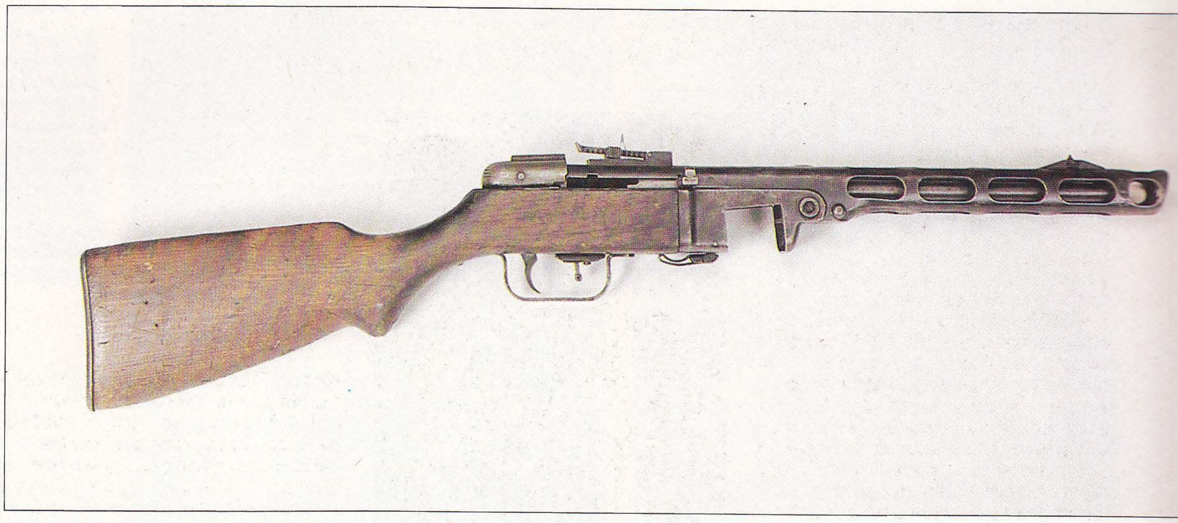
USSR

PPSh-41

In many ways the **PPSh-41** was to the Red Army what the Sten was to the British and the MP40 to the Germans. It was the Soviet equivalent of the mass-produced sub-machine gun, using simple methods and a minimum of complicated machining operations. But unlike the Sten and the MP40 the PPSh-41 was the result of a more measured and involved development process than was possible with, say the British Sten and thus the end result was a much better all-round weapon.

The PPSh-41 was designed and developed starting in 1940 but it was not until early 1942, in the wake of the upheavals of the German invasion, that the first examples were issued to the Red Army on a large scale. As it had been designed from the outset for ease of production the PPSh-41 was churned out in the tens of thousands in all manner of workshops ranging from properly-equipped arsenals to shed workshops in rural areas. By 1945 it has been estimated that over five millions had been produced.

Considering that it was a mass-produced weapon, the PPSh-41 was a well-made design with a heavy solid wooden butt. It used the conventional blow-back system but it had a high rate of fire and to absorb the shock of the recoiling breech block a buffer of laminated leather or felt blocks was provided at the rear of the breech block travel. The gun body and the barrel jacket were simple shaped steel stampings and the muzzle had a downward sloping shape that doubled as a rudimentary muzzle brake and a device termed a compensator that was intended to reduce the amount of muzzle climb produced by the recoil forces when the gun was fired. The barrel was chrome-plated, a standard Soviet practice to ease cleaning and reduce barrel wear, but at one time the need for weapons was so great that the barrels were simply old Mosin-Nagant rifle barrels cut to size. The drum magazine used was the same as that used on the earlier Soviet sub-machine guns. Fire selection (single-shot or full automatic) was made by a simple lever just forward of the trigger. Construction of the PPSh-41 was welding, pins and seam stampings. The overall result was a tough, reliable weapon.



Above: The PPSh-41 was one of the 'classic' Red Army weapons of World War II, and it was produced in millions. It was an emergency design born out of the disruption of the German invasion of 1941.

Right: Involvement in the fighting extended throughout the population, for during some of the many sieges, such as those at Leningrad, Sevastopol and Stalingrad, even the women and children took up weapons.

The German army was much impressed with the Soviet PPSh-41, and when supplies of their own MP40s were lacking they took to using large numbers of captured PPSh-41s. If Soviet 7.62-mm ammunition was in short supply the weapon could fire the German 7.63-mm Mauser pistol round, and by 1945 numbers of PPSh-41s were being adapted to fire German 9-mm ammunition.

The PPSh-41 had to be tough, for once the Red Army started to receive the type in appreciable numbers it adopted the weapon in a way that no other army even attempted to consider. Quite simply the PPSh-41 was doled out to entire battalions and regiments to the virtual exclusion of any other type of weapon other than hand grenades. These units formed the vanguard of the shock assault units that were carried into the attack on the backs of T-34/76 tanks, from which they only descended for the attack or for food and rest. They carried only enough ammunition for their immediate needs, their general life standards were low, and their combat lives were very short. But in their thousands these hordes armed with the PPSh-41 swept across eastern Russia and across Europe, carrying all before them. They were a fearful force and their PPSh-41s became a virtual combat symbol of the Red Army.

Under such circumstances the PPSh-41 (known to their users as the Pah-Pah-Shah) received virtually no maintenance, or even cleaning. Under Eastern Front conditions it soon became apparent that the best way to keep the weapon going under dust or ice conditions was to keep it completely dry and free from any sort of oil, otherwise it clogged or froze.

So many PPSh-41s were produced that the type became a virtual standard weapon for the Germany Army as well as the Red Army, the Germans even going to the extent of recalibring some of their captured hoard to their own 9 mm. Partisans found the PPSh-41 an ideal weapon for their purposes, and after the war the type was used by virtually every nation that came within the Soviet sphere of influence. It still turns up in the hands of 'freedom fighters' all over the world and it will no doubt be around for a long time yet.

Specification:
Calibre: 7.62 mm
Length: 828 mm (32.60 in)
Length of barrel: 265 mm (10.43 in)
Weight loaded: 5.4 kg (11.90 lb)
Magazine: 71-round drum or 35-round box
Rate of fire, cyclic: 900 rpm
Muzzle velocity: 488 m (1,600 ft) per minute

The Siege of Leningrad

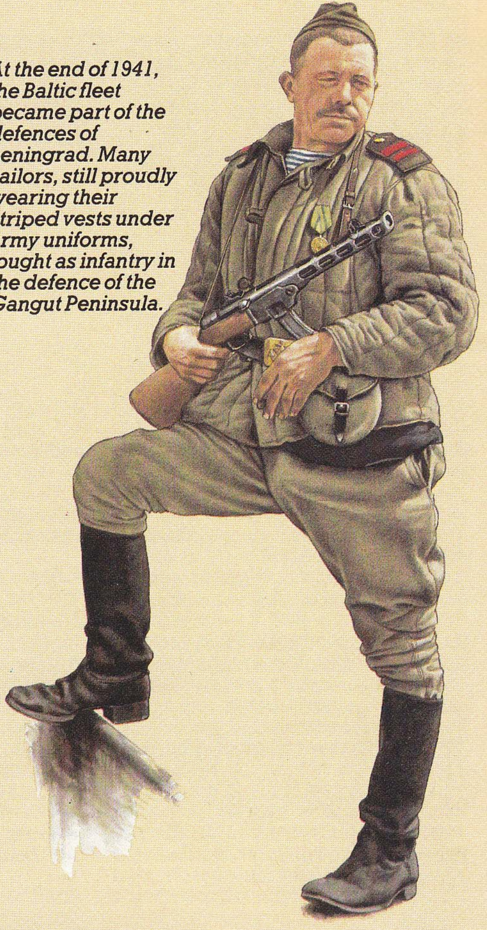
Leningrad was one of the primary objectives of the opening phase of Operation 'Barbarossa' in June 1941. The German invasion of the USSR was planned to take place along three main axes, the most northerly of which was the responsibility of Army Group 'North' under the command of Generalfeldmarschall von Leeb and, paradoxically, such was the success of the opening phase of the campaign that was to cost Germany the war, that in five days Army Group 'North' had covered half the distance to Leningrad.

But at that point a series of massive battles on the central front started to divert the impetus away from the north. The reduced Army Group 'North' forces still moved towards the 'Cradle of the Revolution' but at a reduced speed, so that it was not until September that the approaches to the city were in sight. By that time the defenders had sensed their danger and the populace was put to work to construct defences and anti-tank ditches on the approaches. The Germans themselves assisted this defence by constantly diverting their efforts southwards away from their objective as the approaches to Moscow beckoned, but eventually a definite operational plan to take the city was made. The Finns, the reluctant allies of Germany, were coerced into joining the campaign but did little more than cross the Svir river and establish themselves around Lake Ladoga.

By the time the Germans were ready over one million civilians inside Leningrad had rendered their perimeter into a state fit to defend. When the full German attack took place it almost immediately became bogged down in a myriad of defensive positions, anti-tank obstacles and ditches. The Luftwaffe carried out constant bombing raids, but the German forces were held. Throughout the attack the German local commander, Generaloberst H. Hoth, was restricted by the fact that the bulk of his offensive forces were required to take part in operations to the south, against Moscow, but he used these forces at the very time they were requested to move south. Thus Leningrad made its first major contribution by absorbing forces that might have made all the difference in the battle for Moscow.

18-month siege

The attack on the Leningrad perimeter died out by the middle of September and there began the siege that was to last until the late spring of 1943. It was a rather loose form of siege as the German forces involved could never fully control the whole city boundary and Lake Ladoga could usually be kept open. The Finns did little to assist the Germans, but a city the size of Leningrad requires a great deal of food and other supplies just to exist and these supplies were never forthcoming through the German lines. The civilian population of Leningrad suffered dreadfully. Throughout the winters of 1941-2 and 1942-3 thousands died of cold and hunger to the extent that bodies lay in the streets for days because no-one had the strength or time to bury them.



At the end of 1941, the Baltic fleet became part of the defences of Leningrad. Many sailors, still proudly wearing their striped vests under army uniforms, fought as infantry in the defence of the Gangut Peninsula.

The Soviet PPSh was so simple to manufacture that whole units such as this ski unit were often armed with nothing more than the PPSh-41. In the Russian winter the PPSh-41 would still work, but only if it was left free from oil once cleaned; if oil was used the weapon would freeze solid.

The front-line soldiers received the bulk of what food and supplies were available, but there was little enough of that and food could only be obtained by small-scale forays through the loosely-held German lines. Weapons and ammunition supply were a constant headache for the Soviet commanders, who had been allowed to form their own independent Soviet to conduct their own defence, and they used the slender supply lines that came across the Lake Ladoga ice during the winters for the movement of ammunition and other such material only.

Continuing industry

Leningrad could supply some of its own defence materials, for it had long been one of the major industrial centres of the USSR. The KV tank factory inside the perimeter continued to build tanks throughout the siege. As they were completed they ran off the lines straight into battle, while machine tools from other factories were used to produce small arms and spares, among them the remarkable 7.62-mm PPS-42, the design of which was made more with consideration to what machine tools were available rather than any design refinements.

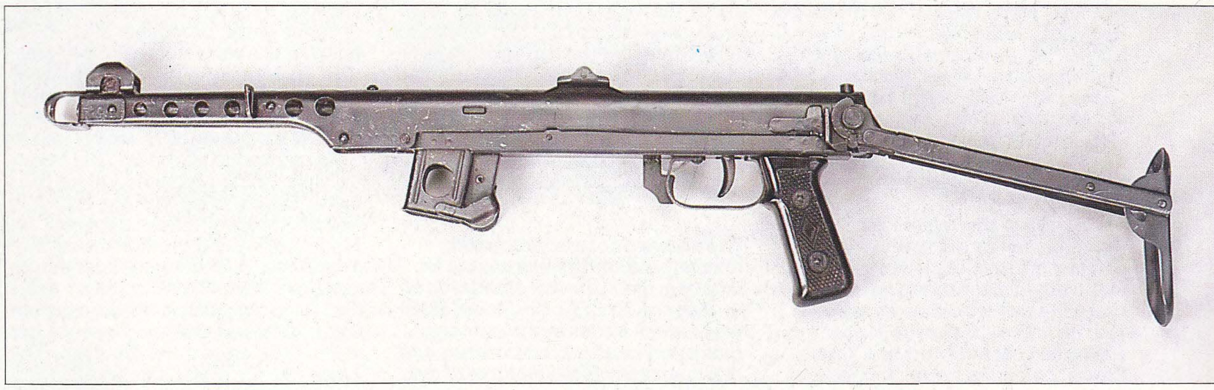
Despite constant artillery bombardment by the Germans and constant small-scale raids, Leningrad held on. By early 1943 the worst was over: the Germans had lost the vital strategic initiative and they fell back to the west leaving the approaches to Leningrad open. Battles still took place along the coastlines to the west of the city, but Leningrad had held and the worst siege of the war was over. Leningrad had won through, although at fearful cost.

The Red Army made great use of posed propaganda photographs both for home and overseas consumption, and this example is typical. It shows two Red Army soldiers with PPSh-41s and another soldier with a DPM light machine-gun in the foreground.

The PPSh-41 was widely issued to the numerous partisan units that were part and parcel of the Red Army's operations behind the German lines. It could absorb a surprising amount of hard use and could go without maintenance for long periods, which was just as well, for partisan training was usually very rudimentary.

USSR

PPS-42 and PPS-43



Few weapons can have been designed and produced under such desperate conditions as those that surround the advent of the Soviet **PPS-42** sub-machine gun. In 1942 the city of Leningrad was surrounded by the German army and the besieged Red Army units were short of everything, including weapons. Leningrad contained a large number of manufacturing facilities and machine shops, so when it came to producing their own weapons the soldiers were relatively well off, but they needed weapons quickly. Under such conditions the sub-machine gun provides a basis on which to work and so an engineer, A.I. Sudarev, set to work.

Sudarev was limited in his choice of design by the materials to hand and the type of machines with which he could work. By sheer pragmatic trial and error he developed a sub-machine gun that embodied all the features to be found in other emergency designs such as the British Sten and American M3. The result was a simple, robust sub-machine gun manufactured from sheet metal stampings, most of them heavy for that was the only material to hand. The gun was held together by welds, rivets and pins, and a simple folding butt was provided. The 35-round magazine used on earlier Soviet sub-machine guns was adopted almost unchanged as production of a drum magazine would have proved too difficult.

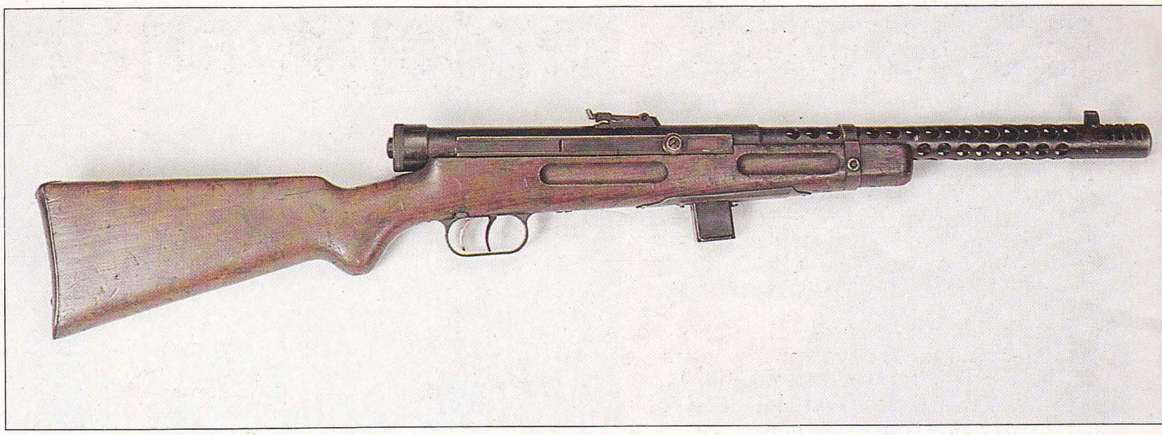
The firing trials of the new design were carried out quite simply by handing out examples straight from the production shops to soldiers in the front line. Their comments and results were fed straight back to the assembly shops where any changes were made on the spot. One of these changes involved the use of a curved steel plate over the muzzle to act as a partial compensator and muzzle brake, and this crude and simple device was retained. In time the new weapon was provided with an official designation, becoming the PPS-42. In action around Leningrad it proved to be a thoroughly sound design and one that could be produced quickly and cheaply, so it was not long after the siege of Leningrad was lifted that the design became official and adopted for general Red Army service. When this took place there was opportunity to remove some of the more rushed and crude features of the weapon. The folding butt was revised so that it could be folded upwards to clear the ejection port, and the original rough wooden pistol grip was replaced by a hard rubber type. The general standard of finish was generally improved, and in this form the weapon became the **PPS-43**. In time the PPS-43 took its place with the Red Army alongside the PPSh-41, but never in quite the same numbers. Considering the inauspicious beginnings of the design it proved to be an excellent weapon in service wherever it was taken, and in 1944 it was adopted by the Finns as their standard sub-machine gun once they came into the Soviet sphere of influence. To this day it remains in service with many armies and like the British Sten, it has been accorded the distinction of being copied in many backyard workshops for numerous subversive reasons.

The Soviet PPS-43 was the full production version of the emergency-produced PPS-42 designed during the siege of Leningrad. The PPS-43 introduced some finesse, but it was essentially a simple weapon.

Specification:

PPS-43
Calibre: 7.62 mm
Length, butt extended: 808 mm (31.81 in)
Length, butt folded: 606 mm (23.86 in)
Length of barrel: 254 mm (10.00 in)
Weight loaded: 3.9 kg (8.60 lb)
Magazine: 35-round curved box
Rate of fire, cyclic: 700 rpm
Muzzle velocity: 488 m (1,600 ft) per second

Beretta sub-machine guns



Above: The Model 1938 was a sound and well-balanced weapon that was a joy to handle and use. No expense was spared in its manufacture, and consequently it was very reliable and accurate. This example is fitted with a 10-round magazine. Note the double-trigger arrangement and the well-finished wooden stock.

Right: Italian troops in Tunisia, their Beretta Model 1938s ready to hand. The weapon on the left is equipped with a 10-round magazine which was often employed when single-shot fire was required. The Model 1938 was very accurate and could be used in the manner of a rifle at combat ranges up to 300 m (985 ft).

The first of the Beretta series was the **Beretta Model 1938A**, which was produced in Brescia. The first examples were produced in 1935 but it was not until 1938 that the first mass-produced examples appeared for issue to the Italian armed forces. The term 'mass production' is perhaps rather misleading for the Berettas, as although they were produced on normal production lines, the care and attention that went into each example was such that they can almost be regarded as hand-made. In fact the Berettas are still regarded as some of the finest examples of the sub-machine gun that it is possible to obtain, and the early Model 1938As were destined to become among the most prized of all.

In design terms the Berettas had little enough of note. They had a well-finished wooden stock, a tubular body, a downwards-pointing box magazine and a perforated barrel jacket, some of them with provision for a folding bayonet at the muzzle. There was nothing really remarkable in these points, but what was very noticeable was the way in which the weapon was balanced and the way it handled in action. It turned out to be a truly remarkable sub-machine gun. The superb finish endeared it to all who used the type, and one result of the painstaking assembly and finishing was a weapon that proved reliable and accurate under all conditions. The ammunition feed proved to be exceptional, but only when the proper magazines were used. There were several sizes of magazines (holding 10, 20, 30 or 40 rounds) and these were issued together with a loading device. The rounds used on the early Berettas was a special high-velocity 9-mm cartridge but this was later changed to the universal 9-mm Parabellum.

There were several variations on the Model 1938A theme, one of which lacked the bayonet and some of the refinements as it was intended to be a special lightened model for use in desert regions. When Italy entered the war in 1941 some small revision of manufacturing methods was made, but the soldier at the front would be hard put to recognize them, for the overall finish remained beautiful. Close examination revealed that the barrel jacket was altered to become a stamped and welded part but that was about the only concession to mass-production technology, and the Model 1938A retained its high reputation.

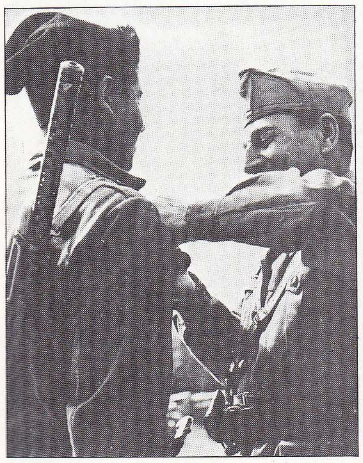
By 1944 the war situation had changed to the extent that Berettas were being produced for the German army, the Italians having surrendered in 1943. By then the basic design of the Model 1938A had been revised by the addition of simpler assembly and manufacturing methods to the point that it had become the **Model 38/42**, while an even later version was the **Model 1**. Relatively few of these two versions were produced and the bulk of them were produced after 1945. Both models were still easily recognizable as Berettas, and while they both retained the overall excellence they were generally simpler and lacked some of the finesse of the Model 1938A.

As mentioned above, by 1944 Berettas were being produced for the Germans. Earlier in the war the Germans had been happy to use numbers of the Model 1938A and the Romanians had purchased a number (they later purchased the Model 38/42 as well). After the Italian capitulation the Berettas became standard German weapons but were little used outside Italy. The Allies greatly prized the Berettas and used them in place of their own weapons whenever they could capture sufficient numbers, but their use by the Allies was restricted to a great extent by a shortage of Beretta magazines. Apparently the sub-machine guns were often captured without their vital magazines, which was perhaps just as well for the Italians.

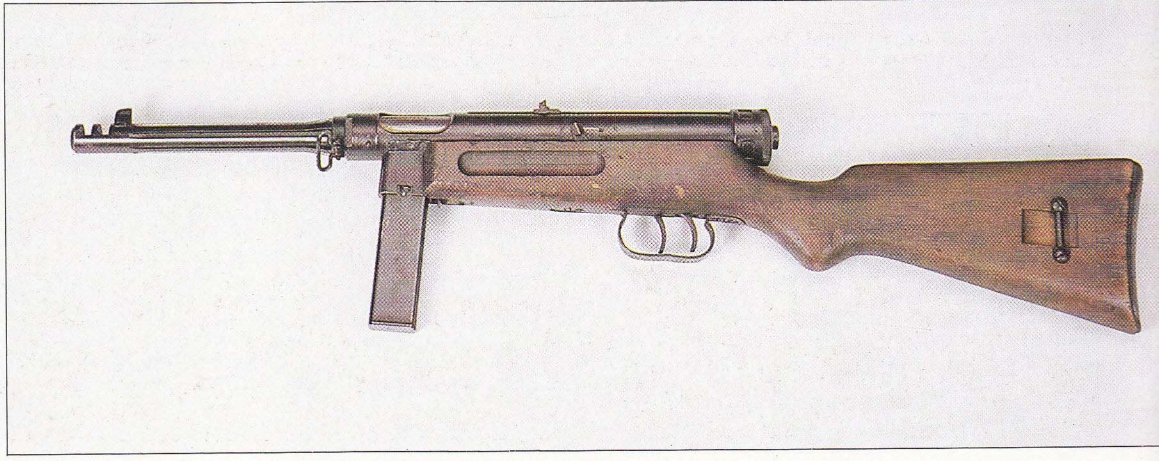
Specification:

Model 1938A
Calibre: 9 mm
Length: 946 mm (37.24 in)
Length of barrel: 315 mm (12.40 in)
Weight loaded: 4.97 kg (10.96 lb)
Magazine: 10-, 20-, 30- or 40-round box
Rate of fire, cyclic: 600 rpm
Muzzle velocity: 420 m (1,380 ft) per second

The nature of the Italian Fascist state was such that by the time any youth entered the Army he was already well trained in the use of most of the weapons they would be issued with. This included the Beretta Model 1938, seen here carried by a Young Fascist being decorated by General Bastico.



The demands of war production meant that Beretta were unable to maintain their pre-war standards of excellence. Even so, the Model 38/42 was a much better weapon design than many of its contemporaries and retained many of the features of the pre-war model.



US Rapid Deployment Force

Part 2

Deployment and supply

The heart of the RDF concept is that the bulk of the forces involved will be able to move to the SWA (South West Asia) region of action and, when there, continue to be supplied. This is the RDF's weakest point, for to deploy forces on the scale that the RDF mobilization will entail is currently beyond the scope of the US Air Force Military Air Command (MAC), even if the Civil Reserve Air Fleet (CRAF) becomes involved. Also involved in this massive move would be the finding in the region of sufficient reliable bases from which to operate.

The latter point can be considered first as American policy planners are currently involved in the preparation of several ports and airfields in the SWA theatre. These facilities have been obtained by local discussions leading to the active updating of existing sites to make them usable on the scale that any move by the RDF will involve. There are several of these locations scattered around the Indian Ocean and others en route to SWA. At all of them the US Army Corps of Engineers has overseen the construction and modification of all manner of airfield and port facilities at Ras Banas in Egypt, Masirah Island off Oman, Mombasa in Kenya, Berbera in Somalia, the island of Diego Garcia and facilities in the Azores. Kenyan airfields involved are Embakasi and Nanyuki, and in Oman more facilities will be provided at Seeb airfield, thumrayt, and the ports of Mutrah and Salalah.

Most of these locations will be used as staging bases and staging posts. Many of them already have oil storage facilities or will be provided with them. Payment for these facilities is made in a variety of ways from direct cash to economic and military aid.

To move a force the size of the RDF involves more than air transport, as the bulk of the RDF's equipment is such that sea transport is involved. For this purpose no less than 17 heavy cargo carriers are scheduled to be based in the SWA region, most of them at Diego Garcia, already loaded with the heavy supplies needed by RDF units. More shipping is earmarked in the continental United States for the task, and the experience gained during the recent Falkland Islands campaign is being examined for any possible lessons. The Military Sealife Command has no fewer than 37 dry cargo vessels in service with a further 29 in the Ready Reserve Fleet. To these can be added 167 other reserve vessels, but not all of these will be available all the time.

The airlift potential of the US forces, although considerable, is now insufficient for the RDF requirement and is currently being reinforced by the purchase of a further 50 Lockheed C-5B Galaxy heavy-lift transports and some other aircraft, including a substantial quantity of McDonnell Douglas KC-10A Extenders. In the Fiscal Year 1983 the strength of what are termed US Military Mobility Assets were as follows:

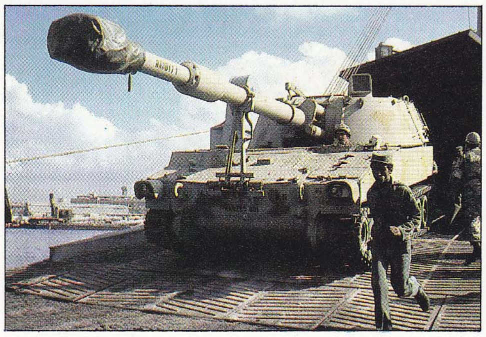
Active Forces aircraft	**inventory**
Lockheed C-5 Galaxy	70
Lockheed C-141 StarLifter	234
McDonnell Douglas KC-10 Extender	12
Lockheed C-130 Hercules	218
Boeing Vertol CH-47 Chinook/ Sikorsky CH-54 Tarhe	333
Sikorsky CH-53 Stallion	161

Reserve Forces aircraft	**inventory**
Lockheed C-130 Hercules	294
McDonnell Douglas C-9/ Fairchild C-123	19
Boeing Vertol CH-47/ Sikorsky CH-54	169
Sikorsky CH-53	18

It should be stressed that these are inventory totals only, and that operational strengths would thus be much smaller. To these can be added 215 passenger aircraft and 109 cargo aircraft from the Civil Reserve Air Fleet (CRAF), and this total is to be increased if funds become available.

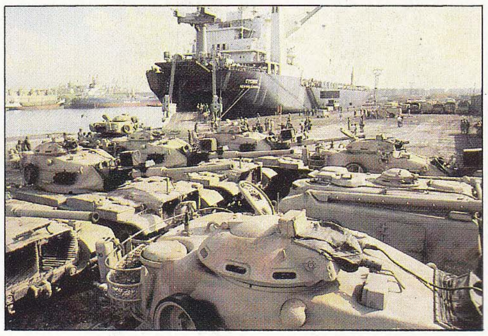
USS Tarawa, *capable of landing and supporting a 1900-strong reinforced marine battalion, is the largest amphibious warfare vessel yet built.*

An M109 155-mm self-propelled howitzer being disembarked at Alexandria during Exercise 'Bright Star '82'.



Lockheed C-5 Galaxy aircraft provide the RDF with capacity to move loads up to Main Battle Tank size by air.

Commercial shipping can be used to provide a sealift capacity, and the campaign in the Falklands is being studied for possible lessons.



Equipment

The RDF will be equipped with the same weapons as all other branches of the US armed forces, but already moves are being made to introduce newer equipment that will produce greater mobility without any sacrifice of firepower. Much of this new equipment will take the form not of weapons but rather of support equipment such as bridging, fuel supply systems, and water supply and purification systems. Already much training has been carried out in the SWA area, including such relatively large-scale exercises as 'Bright Star' (three of which have been carried out in Egypt) and 'Jade Tiger' (carried out in conjunction with Somalia, Sudan and Oman). Some of these exercises have been carried out on a relatively small scale but have still involved some large airlifts and taught some invaluable lessons. One was learnt during the first 'Bright Star' when over one quarter of MAC's strength was involved in moving a single battalion plus its support from the United States to Cairo. Such lavish deployments will be 'out' in future.

In general, US Army divisions will be light on armour and those involved will be based around the M60 main battle tank. The US Marines will gradually introduce their new LAV (Light Armoured Vehicle) based on the Cougar wheeled vehicle. Support artillery will be towed instead of self-propelled (although some M109A2s will be involved for the time being), the weapon mainly involved being the M198 towed 155-mm howitzer. Numerous proposals for other support weapons for the RDF have been mooted, including such things as 'miniature' MLRS long-range rocket-launchers, towed DIVADS 40-mm anti-aircraft guns and special Chaparral SAM carriers, but these all depend on funding, and extra funding over and above the huge sums already involved is unlikely.

The US Air Force, other than the MAC involvement, is likely to be based on a mix of McDonnell Douglas F-15 Eagles and Fairchild Republic A-10 Thunderbolt IIs for direct support, and on General Dynamics F-111s and Boeing B-52s (probably operating from the continental USA) for bomber support.

The US Navy is already operating in the Indian Ocean, with at least one carrier-based battle group on station at any one time. The US Navy is already deeply involved in a major re-equipment programme and is unlikely to make any major RDF changes, but already under way are a new class of amphibious assault ship (the first of which is the LSD-41 *Whidbey Island*) and a new multi-purpose amphibious assault ship known as the LHD. Involved with these will be new special crane ships and lighters, including hovercraft for the assault and supply role.

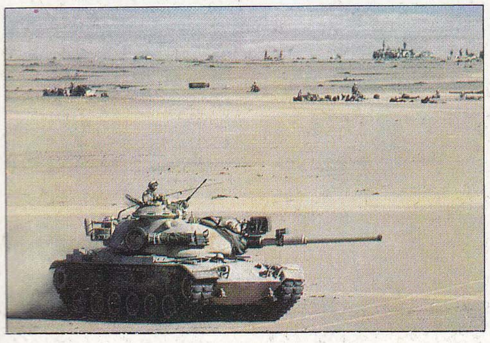
The US Marine Corps is currently reorganizing itself around a new Light Armoured Vehicle (LAV) battalion, and the air component of their amphibious force is now the BAe AV-8A Harrier of the Vought A-7 Corsair. In future these will be supplemented (or replaced) by the McDonnell Douglas AV-8B Harrier II.

To control all these various formations the American forces are also deeply involved in a programme to provide a flexible and capable C^3 (command, control, communications) series of systems, but nothing definite has yet been agreed. It is known, however, that considerable use of Boeing E-3A Sentry AWACS aircraft will be involved. Some of these aircraft have already been based in Egypt and Sudan on occasion.

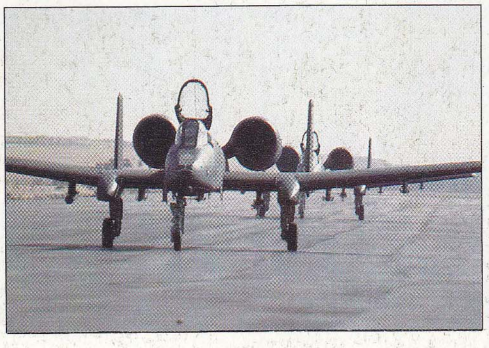
Above: Members of the 82nd Airborne Division set up a perimeter round the drop zone. The division usually flies direct to the drop from its base in North Carolina.

Below: The Sikorsky UH-60A Black Hawk is air transportable, carries a wide variety of weaponry and can carry up to 11 fully-equipped troops at the same time.

For the moment, what armour the RDF can deploy will consist of M60A3 Main Battle Tanks.



The 30-mm cannon of the Fairchild Republic A-10 can be deployed in support of forces faced by hostile armour.



Further extension of capability will come with the increasing use of amphibious air cushion vehicles (LCAC).